- Ecusta's new No. 10 machine
- Natural rubber and natural resin adhesives
- Freeze-free outdoor stock tanks
- Report on PIMA Conference

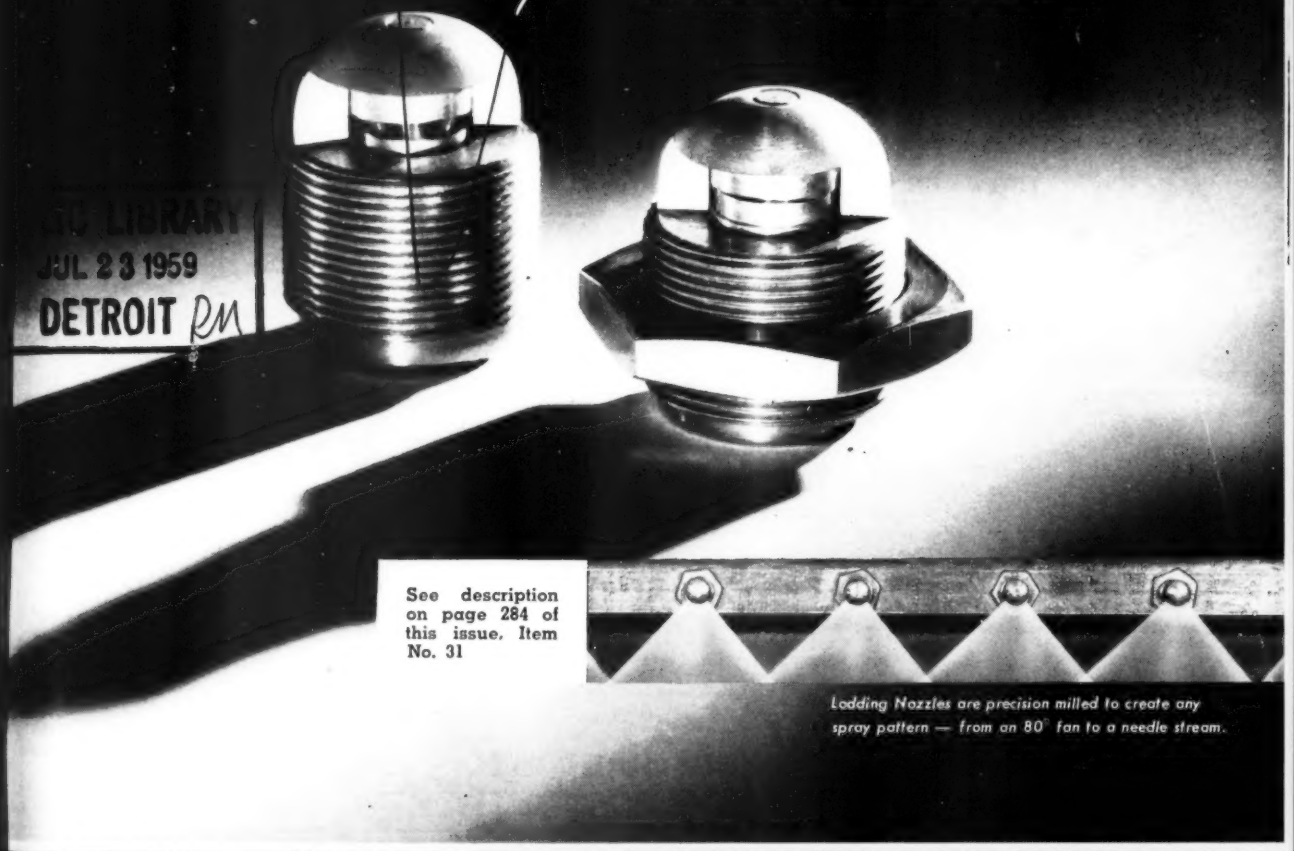
The Paper Industry

Publishers of PAPER AND PULP MILL CATALOGUE

Lodding Self Cleaning Showers Conserve Water

The secret's in the nozzle — an engineering achievement leading to new showering efficiencies in systems using clarified white water as well as fresh water.

LODDING ENGINEERING CORPORATION • AUBURN, MASSACHUSETTS



See description on page 284 of this issue, Item No. 31

Lodding Nozzles are precision milled to create any spray pattern — from an 80° fan to a needle stream.

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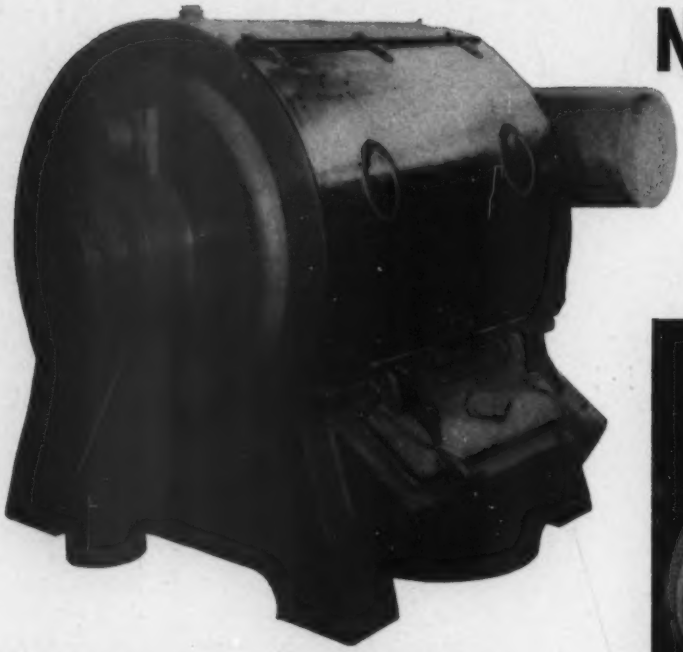

NEW ADVANCES IN LOW COST QUALITY PULP SCREENING

IMPCO CENTRIFUGAL SCREENS FOR:

Washed Stock Screening
Hot Stock Screening
Sealed Black Liquor Knotting
Fibre Length Classification
Paper Stock Cleaning

The new Impco Centrifugal Pulp Screen is the latest example of the progress made toward the ultimate in low cost quality screening. This screen incorporates many improved principles and features such as:

- — a stock inlet allowing direct top, bottom, front or rear infeeding which simplifies installation piping;
- — a tangential inlet which changes flow direction from linear to rotating, yet retains velocity head;
- — a special stator which provides uniform internal distribution of pulp;
- — a patented high-efficiency rotor which increases capacity without additional horsepower;*
- — a bottom accepted stock outlet permitting all sub-floor piping;
- — a full length quick-opening door for routine accepted stock sampling;
- — an accessible rejects outlet for tailings inspection or sampling.

These features are resulting in peak capacities and high discharge consistencies at lowest horsepowers. Reject richness is readily controlled. Engineered simplicity is characteristic of the entire line of Impco Centrifugal Screens which require very little operating attention and mechanical maintenance.

* U. S. Patent No. 2,845,848.

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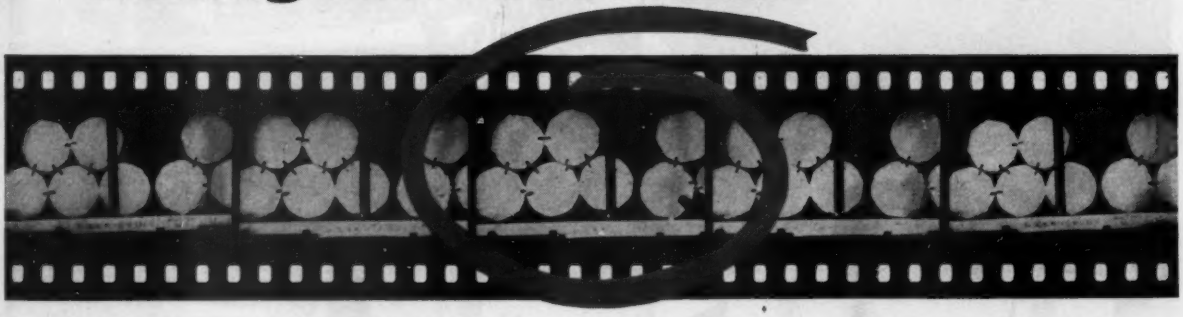

1600-pound rolls of paper bounce several inches into the air when impacted in Signode's open-sided test car. Methods developed by tests like these save thousands of dollars for Signode customers—and *their* customers—by reducing damage losses and cost of dunnage.

Signode offers unparalleled experience and test facilities to help shippers reduce damage to shipments by rail, highway, or water...of paper in rolls, on bilge or on end, or of paper on skids or expendable pallets. We would like very much to give you a hand toward better carloading. It will pay you to call the Signode man near you, or write:

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- **reduces power consumption**
- **increases production**

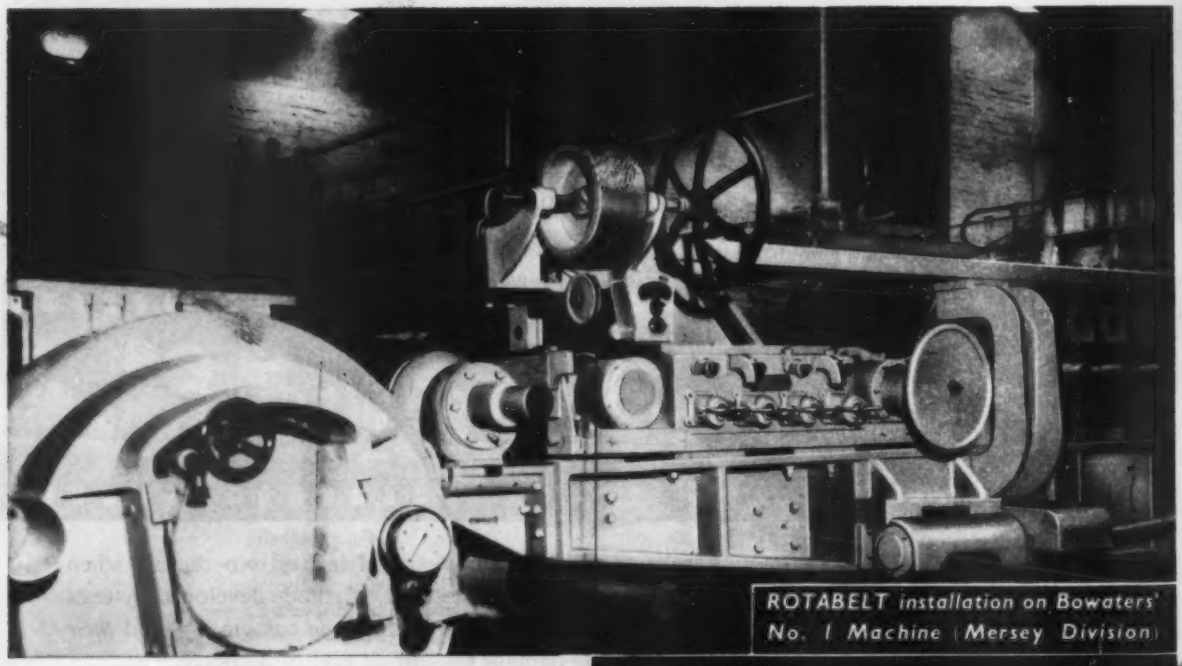
REPORT FROM BOWATERS

after more than twelve months in operation:

1 Wire life has been more than doubled.

2 Couch drive load reduced by 31%.

3 Saving in Labor Cost by fewer wire changes.



ROTABELT installation on Bowaters' No. 1 Machine (Mersey Division)

BOWATERS' REPORT *"We can say after running for one year the ROTABELT has proved to be an outstanding success."*

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Papermakers' Engineers

NASHUA, NEW HAMPSHIRE, U.S.A

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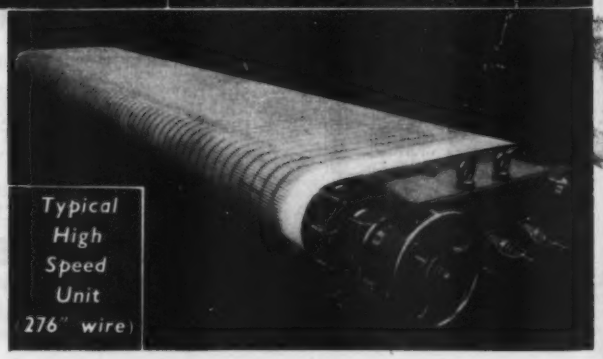

Typical High Speed Unit (276" wire)

The Paper Industry

Technology • Engineering • Management • Production

VOLUME 41 **NUMBER 4** **JULY 1959**

Features . . .

Editorial — How rapid is business recovery? 237

Whither? — Detection of casein in paper — U. S. production of paper and paperboard in 1959 to reach 32 - 32.5 million tons — Business activity strong in second quarter — Bleach it while make it — Vacuum metalizing process 292

Ecusta's No. 10 machine in full operation 244

Adhesives in the paper industry: Part V (continued) 248

Paper Industry Management Association (convention report) 249

Freeze-free outdoor stock storage tank at Gould Paper Company 252
by A. A. Hagar

Hydraulic drive simplifies the addition of a paper press section 255

Wood to mill by pipeline 261

New freeze process 261

Notes on forestry 262

Recent expansions in the industry 262

News . . .

News of the Industry 261
Names in the News 270
Necrology 270

Departments . . .

Current Comments 257
Coming Events 268
Foreign Abstracts 272
Patent Reviews 276
New Products 277
New Literature 285
Market Quotations 289
Index to Advertisers 291

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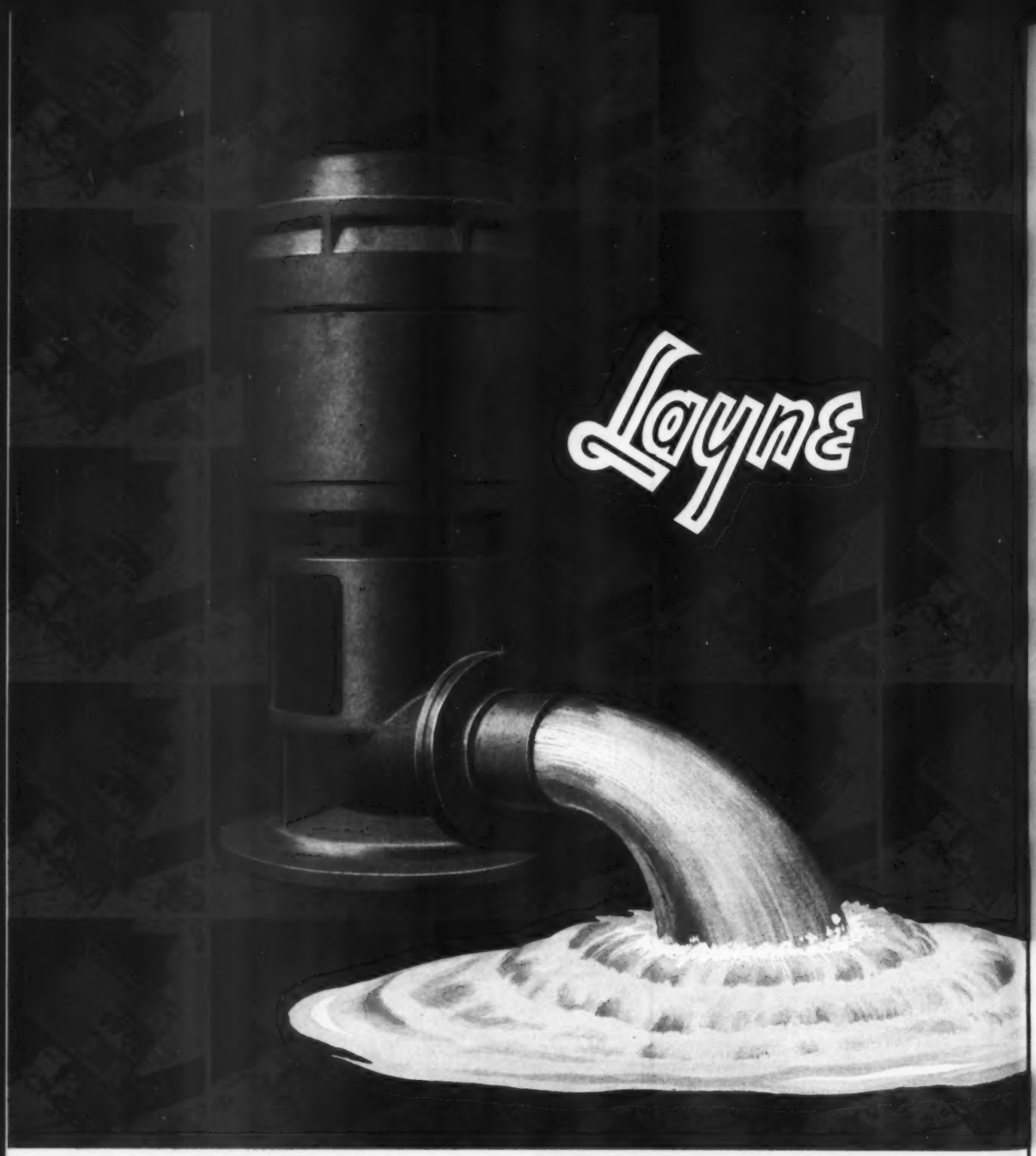

Layne pumps top more producing water wells

Layne Pump Design, manufacture and installation are only part of the complete water service offered by the Layne organization. Other services include: Initial surveys, explorations, recommendations, site selection, foundation and soil sampling, well drilling, well casings and screens, gravel wall wells, construction of water systems, complete research staff and facilities, maintenance and service, chemical treatment of water wells, water treatment. *Write for Bulletin No. 100.*

WORLD'S LARGEST Layne WATER DEVELOPERS

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From our point of view..

How rapid is the rate of business recovery?

The paper and paperboard industry, according to the latest "Pulp, Paper and Board Industry Report" issued by the U. S. Department of Commerce, showed a production increase in the first quarter of 1959 of 9.8 per cent over the corresponding period in 1958.

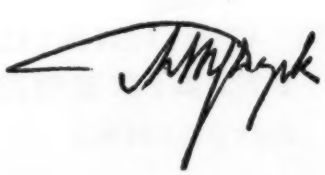
This production increase closely parallels the generally strong economic recovery in this country as indicated by the 9 per cent increase in the gross national product during the first quarter compared to that of 1958. Even more optimistic trends are indicated by the expectation that auto sales in 1959 will total more than the originally predicted number of 5.5 million cars and the fact that steel operations have reached 93.6 per cent of production capacity — which is the second highest on record.

The actual output of paper and paperboard in the first quarter of 1959 totaled 8,175,000 tons against 7,443,000 tons in the first quarter of 1958. Broken down into the main product categories this entailed gains of 7.8 per cent for paper, 11.0 per cent for paperboard, and 15.2 per cent for building paper and board. The second quarter is expected to show a new peak output of 8,700,000 tons, which would mean a gain of 13 per cent for the first half of 1959 compared with that of the corresponding period in 1958.

It is also significant, and a strong contributing factor to the prevailing optimistic outlook, that this paper and paperboard output is earmarked directly for actual consumption and not for replenishment of inventories.

The concern with which mill modernization and expansion programs were viewed only a few years ago, for fear that they might result in serious overcapacities, has now given way to a strong feeling of confidence, especially since the expansion and modernization programs are now beginning to pay high dividends and as the industry on the whole is facing the demands of a strongly revitalized economy and markets.

In line with this feeling of confidence must come a greatly increased need for modernization of obsolete and worn out plants and equipment in order to increase productivity and upgrade paper products. While in 1958 and 1959, 59 per cent of the capital expenditures were allocated for replacement and modernization and 41 per cent for expansion, these percentages are expected to change to 62 per cent for modernization and replacement and 38 per cent for expansion in the years 1960-1962. However, an even greater rate of modernization and replacement may be needed to meet the needs of a vast future market that will undoubtedly call for an upgrading of paper and paperboard products for use in new and non-traditional applications.



SIBAKIS

is the abbreviation for the American Management Association's bright, new slogan *See It Big and Keep It Simple.* It is also the most appropriate word for describing Huyck's viewpoint toward synthetic-content felts.

Huyck sees it big by (1) laboratory testing every man-made fiber presently available or in the development stage . . . and (2) thoroughly field testing those that show the greatest promise of improved felt performance — so that only the best remain.

Huyck keeps it simple by using *only* those fibers that give our felts superior operating properties.

Your Huyck Field Service Engineer wants to work with you in analyzing your specific machine requirements. Let him help determine the advantages you can gain by employing synthetic-content felts.

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Huyck Felt Co.,
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NEW HUYCK FELTS

★ INDUSTRIAL FABRICS

FIRST IN QUALITY • FIRST IN SERVICE SINCE 1870

DIAMOND
SHOT CLEANING

Its Advantages

This system offers much improved cleaning of certain areas of boilers such as tubular air heaters, horizontal superheaters, economizers, and reheaters. It will often accomplish effective cleaning where this has not been possible previously. Areas which tend to foul rapidly may be kept completely clean by increasing the length of the automatic shot cycle (it may be continuous if necessary) without disturbing boiler operation. No platforms or galleries are needed as with conventional cleaning equipment so aisle space often may be reduced.

Uniformly low draft loss and constant flue gas temperature are easily maintained because deposits are removed before they impair the thermal efficiency of the plant.

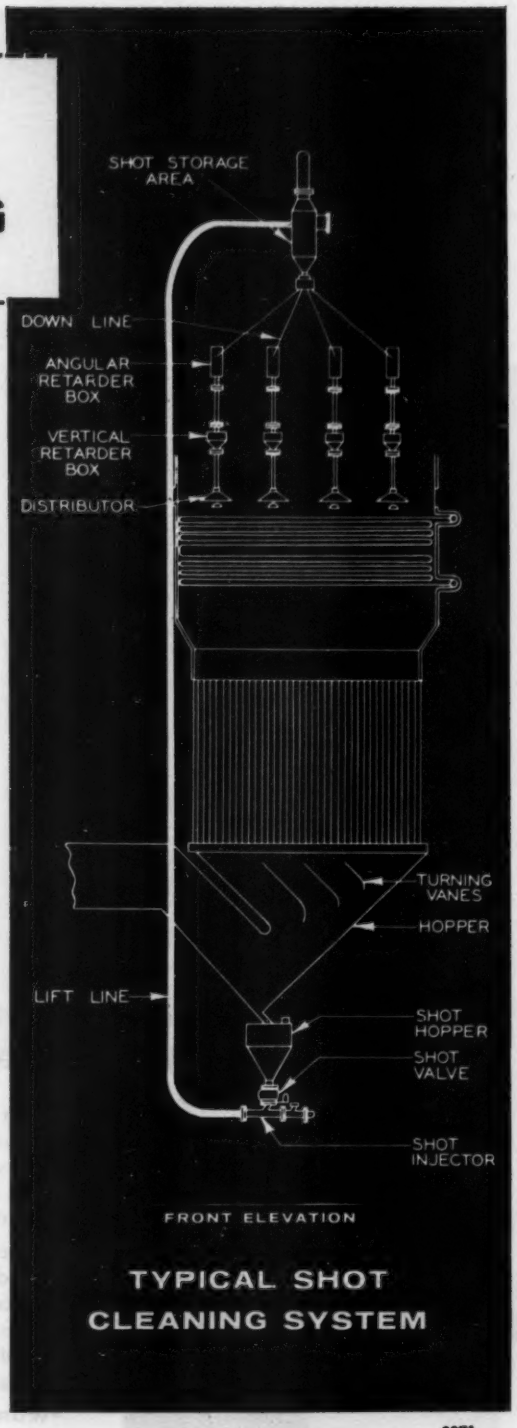
Cleaning is accomplished by thousands of steel shot that cascade over tube surfaces and ricochet from tube to tube, or through the insides of air heater tubes.

How It Works

Falling shot, spread uniformly by distributors scours the fouled area. Deposits are removed in small particles, most of which are carried away by the gas stream. Heavier particles fall into the shot hopper and recirculate with the shot until broken fine enough to pass out with the gases. Cleaning is thorough even with difficult fouling such as is found in black liquor fired boilers. The same quantity of shot will clean the entire vertical section with no limitations in height.

Operation is automatic. Shot is lifted pneumatically from the hopper to a shot storage area where it falls by gravity through retarder boxes to the distributors. Length and frequency of cleaning cycle are chosen according to the fouling rate of the area and the type of deposit.

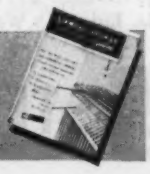
More than 30 Diamond Shot Cleaning Systems are now in successful operation in the United States . . . some of them since 1954. This is the result of Diamond's extensive research in shot cleaning over a period of years. In Europe shot cleaning has been in use over ten years and there are more than 800 installations in highly satisfactory operation. To supplement our developments, Diamond has acquired U.S. rights to the Broman-Ekstrom System used in Europe.



TYPICAL SHOT CLEANING SYSTEM

8271

WRITE FOR BULLETIN 2145Z. It gives you complete details on Diamond Shot Cleaning. For better, more economical boiler cleaning, the answer always is Diamond.



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LANCASTER, OHIO

Work with your AIM*. . . Hawthorne Paper Co. does . . .

Steel Strapping Idea protects paper shipments

Acme Idea Man Chuck Deerwester helped Hawthorne Paper Company develop this improved car bracing method.

HAWTHORNE PAPER COMPANY, Kalamazoo, Michigan, required a procedure to insure protection and safe arrival for rail shipments of quality rag content bond and ledger papers. Working with their Acme Idea Man, they adopted a better method of bracing steel-strapped skid loads of paper in box cars. (Idea U1-12)

Protected by heavy-duty Acme Steel Strapping, skids of paper are braced to form a controlled floating load. Thus, in-transit shocks and impacts are absorbed and Hawthorne paper arrives without damage, ready for feeding from skid to printing press. In addition to greater customer satisfaction, Hawthorne enjoys important time and material savings over their former car bracing method.

***WORK WITH YOUR ACME IDEA MAN.** His wide experience in solving product protection and shipping problems is sure to result in Ideas that will benefit you. Call him at your nearest Acme Steel office. Or write Dept. PKU-79, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Ltd., 743 Warden Avenue, Toronto 13, Ontario.

ACME STEEL **STEEL STRAPPING**

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research begins in your mill

1 *An Albany Felt sales engineer helps a customer get to the root of a basic problem.*

2 *In Albany's chemical research laboratory, Harold Hedberg, VP/Research and Development, inaugurates work on a project brought in from the field. In addition to this research center, Albany Felt Company maintains an advanced mechanical research laboratory, research facilities at St. Stephen, S.C., North Monmouth, Me., and Cowansville, Quebec, and a fellowship at a world renowned research institute.*

3 *End result of applied research—fast, trouble-free performance!*

It's at the paper mill that felt research pays off.

It begins with the Albany Felt sales or service engineer who consults with you and then relays the facts to our team of experienced designers and laboratory specialists.

This is the team that first discovered and developed the use of synthetics and chemical treatments which solve many of your critical felt problems. Working on your present requirements, they can help achieve fast, trouble-free performance.

Remember—the felts, treatments and techniques that will break tomorrow's production records are now passing their final tests "under wraps" in our testing laboratories.

Call in your Albany Felt sales engineer. Let him *show* you how Albany's research team can help you get more tons per day—more days per felt.

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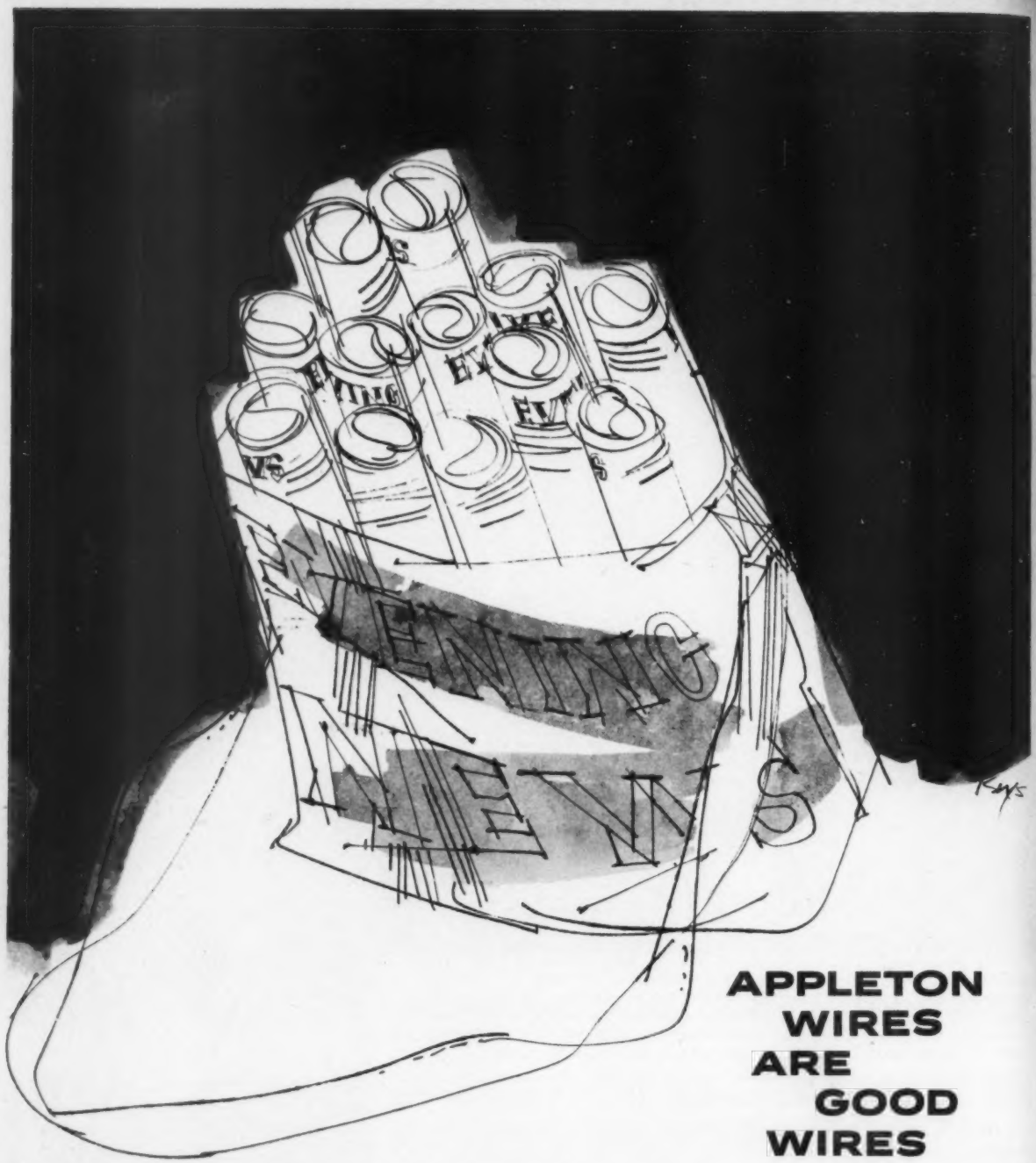
NEW IDEAS FOR BETTER PAPERMAKING—FROM THE WORLD'S LARGEST MANUFACTURER OF PAPER MACHINE FELTS



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The newspaper is a powerful molder of opinion and an important tool of mass communication. Newsprint for many influential newspapers throughout the country is formed on Appleton wires, specifically made for high-speed newsprint machines. Long-wearing, perfectly woven Appleton wires have passed a 63 year test-of-acceptance by the industry. Condensor paper, newsprint, writing paper or pulp, there's an Appleton wire to fit your manufacturing requirements. Ask your AWW representative. **APPLETON WIRE WORKS CORPORATION, APPLETON, WISCONSIN.** Plants at Appleton, Wisconsin and Montgomery, Alabama. International Wire Works, Menasha, Wisconsin, an affiliated company.

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DOW LATEX "BEEFS-UP" BOXBOARD COATINGS!

Newsboard maker gets better binder at no extra cost

A switch from casein to Dow Latex as a coating binder for boxboard has resulted in better quality board and easier processing for a large midwestern manufacturer of clay-coated board.

Here's how: By substituting Dow Latex for casein in the binder formulation, they were able to obtain a pigmented clay coating with a lower viscosity, but containing a higher percentage of solid materials.

Result: Now, the new high-solids formulation with Dow Latex gives them a higher quality board with a heavier coating and better coverage—and as a result—better overall printability! The higher percentage of latex present in the coating means easier finishing on the calender — and a smoother, glossier board.

Many leading paper and board manufacturers are discovering the advantages of Dow Latex. Chances are a change to Dow Latex in the coating will make your boxboard behave better—in your production processes, and in your customer's end use. Why not contact the nearest Dow sales office, or THE DOW CHEMICAL COMPANY, Dept. 2321DN7, Midland, Michigan, for complete technical information.

THE DOW CHEMICAL COMPANY · MIDLAND, MICHIGAN

Ecusta's No. 10 machine in full operation

▶ Ecusta's Rice Barton paper machine is specially designed to produce light weight papers. A specially designed Valley Iron Works headbox provides for maximum versatility in flow control, tied in with Curtiss-Wright Corp.'s transversing beta gauge that measures and controls basis weight.

THE RECENT installation of Ecusta's No. 10 paper machine, designed specially to produce light weight papers and one-time carbonizing paper, has increased the company's production of light weight papers by 35 per cent. The company (now a division of Olin Mathieson Chemical Corp.), with its specialized background in light weight papers, has succeeded in establishing a strong identity with these paper grades.

The machine, which consitutes the core of a $6,500,000 expansion program at this mill, can produce a variety of papers from 13 to 40 lb. weights, including many new types such as the recently developed "Waylite" which combines lightness with high tensile strength, ultra-whiteness and good printing opacity.

The new machine is known as the "Cherokee Arrow" and is considered one of the most automatic machines of its type in the industry. It incorporates such features as:

1. electronic supervision of process control.
2. a beta gauge for control of weight variations in the sheet of paper.
3. the winder is equipped with differential drive for finer control of sheet tension.
4. the machine is equipped with both endless and seamed felts.
5. all process piping and water lines over 3-in. dia. are made of 316 ELC stainless steel, while copper is used for water lines under 3-in. in diameter.
6. a specially designed headbox provides for maximum versatility in flow control.

No. 10 machine is housed in a new 72,000-sq.-ft. building constructed of solid brick and specially lighted by a new type of fluorescent tubes. Consulting engineers for the project were Chas. T. Main Inc.

Stock preparation

Pulp, purchased in the United States and Canada, is carried by conveyor to the No. 4, 4000-lb. capacity (6½ per cent stock), batch-type Hi-Lo pulper of stainless steel and tile construction and equipped with two 200 hp motors. One motor is driving a low-speed disk at 167 rpm and the other a high speed disk at 690 rpm. From the pulper, stock is pumped by a 6-in. stock pump to the 9-ton capacity dump chest. The stock preparation room, fully instrumented, is directly in front and on the same level of the machine room—making possible a straight-line processing flow to the machine.

A 6-in pump pumps the stock to three package-unit beaters in the stock preparation room. The beaters are equipped with 2,000 lb. capacity tubs (made of special acid-resistant High Temp Tile), stainless steel fittings and 72-in. dia. rolls which are regulated by elapsed-time, automatic controls to provide good duplication of beater furnishes. The rolls are driven by 400-hp motors through chain and sprocket drives.

From the beaters, stock is pumped by a 4-in. stock pump to three 350 hp Imperial jordans, each equipped with Accru-Set controls and using the Adapta Plug and Fulbar one-piece construction shell filling. One of the jordans operates as a hydrating refiner and the other two as either cutting refiners or ticklers. The jordans can be controlled either from the stock preparation graphic panel or directly from the machine.

Refined stock is cleaned in a three-stage Dirtecs arrangement consisting of 12 six-inch sumpless primaries, 12 two-inch secondaries and 3 four-inch tertiaries.

The cleaned stock is then pumped to two 3A stainless screens for final cleaning. Each screen is equipped with a 6-in. sumpless and a 2-in. Dirtec tailing unit.

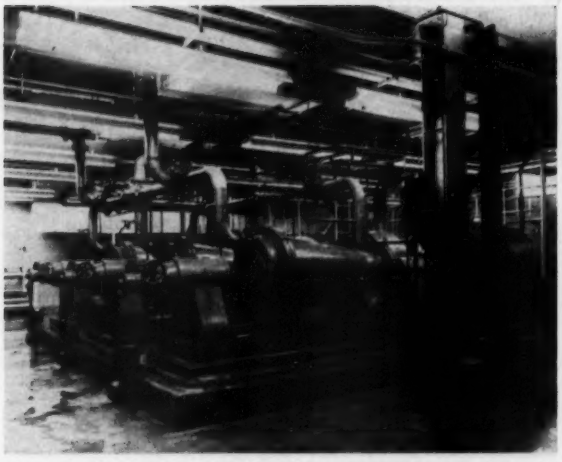
All stock pumps are open impeller, end suction pumps with renewable liners, adjustable ball bearing rotor, and diagonally split cases.

Two metering systems, one automatically metering color, broke and size and the other alum and filler to the stock system, and a graphic stock preparation control panel are the nerve centers of the stock preparation system. All process flow is controlled by a magnetic flow meter, consistency regulators and stock valves.

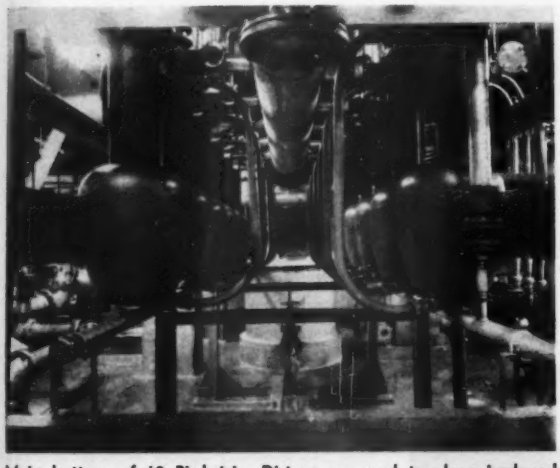
Paper machine

A 12-in., open impeller, double suction pump pumps the screened stock through the stainless steel flow manifold to the three-compartment headbox equipped with an adjustable slice combination suitable for gravity operation up to 1000 fpm and with provision for air loading at higher

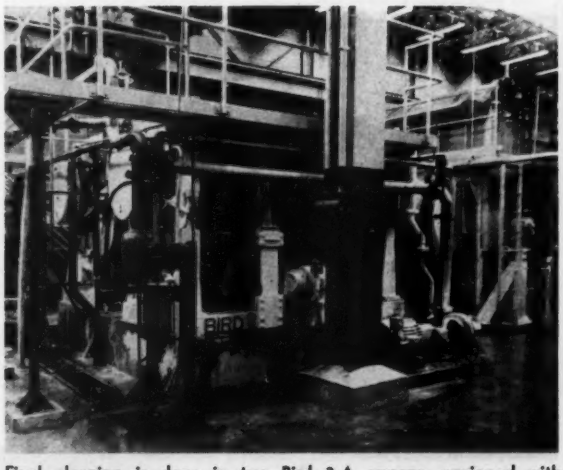
Three E. D. Jones 2,000-lb. capacity beaters, equipped with 72-in. dia. rolls.



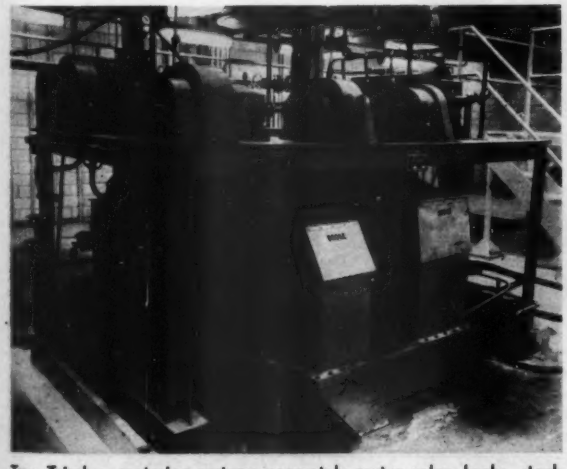
Three E. D. Jones Imperial jordans, equipped with Accru-Set controls.



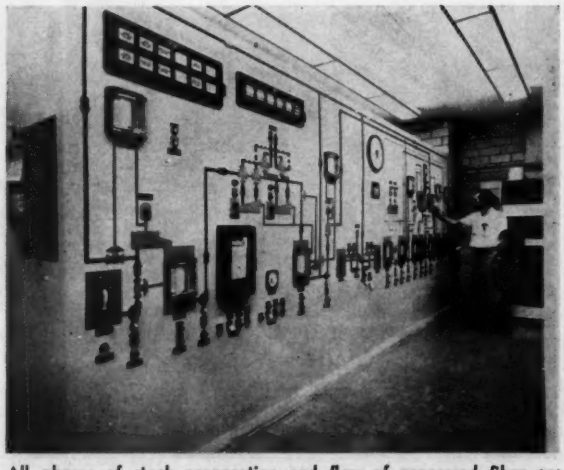
Main battery of 12 Bird 6-in. Dirtecs are used to clean jordaned stock.



Final cleaning is done in two Bird 3-A screens, equipped with Dirtec tailing units.



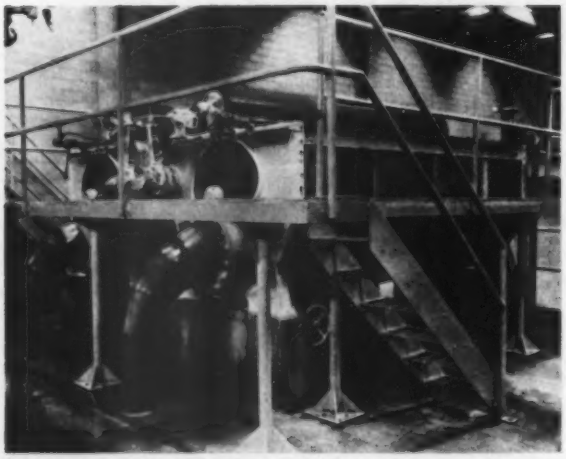
Two Trimbey metering systems accurately meter color, broke, stock, alum size and filler.



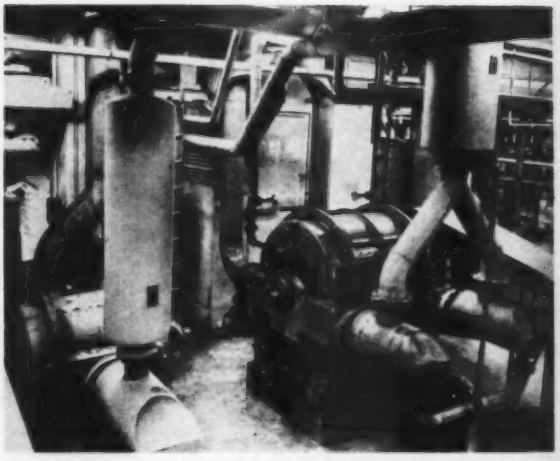
All phases of stock preparation and flow of processed fiber are controlled from this panel.

Valley Iron Works inlet-headbox-flow manifold combination, with special design features in the slice.

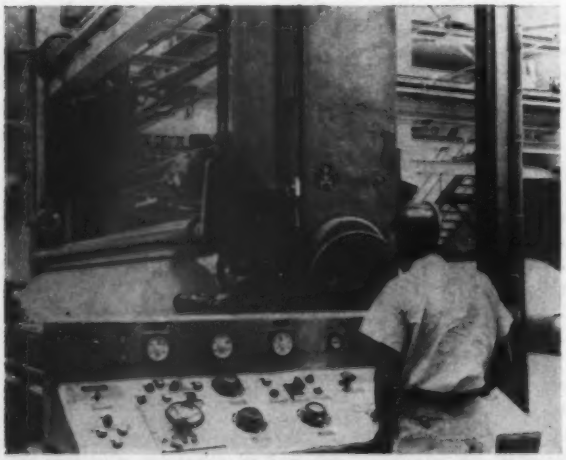
Rice Barton 182-in. wire fourdrinier with Valley Iron Works headbox and J. O. Ross air system.



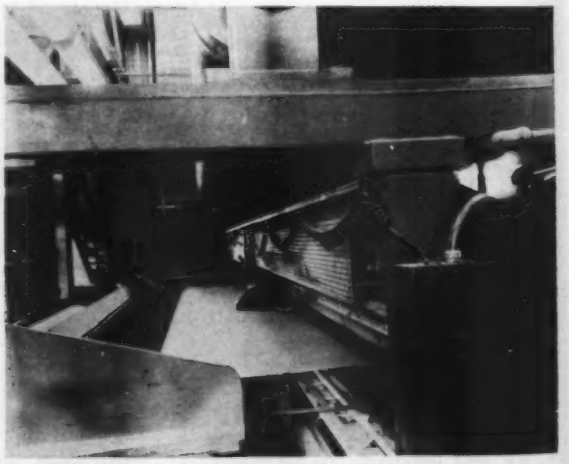
Two Bird save-alls recover fiber from white water and return it to the broke chest.



Nash Engineering vacuum pumps provide vacuum for suction boxes and couch.



Constant tension on the winder is maintained by a differential drive.



Curtiss-Wright Corp.'s beta gauge for basis weight and profile control.

Principal equipment installed with No. 10 light weight paper machine at Ecusta Paper Division

Consulting Engineers — Chas. T. Main Inc.

Stock preparation

Beaters (3), with 72-in. dia. rolls, 2,000 lb. capacity	E. D. Jones & Sons Co.
Beater-roll controls, elapsed-time automatic	Foxboro Co.
Consistency regulators	DeZurik Corp.
Directs (27), 12 primaries, 12 secondaries, 3 tertiaries	Bird Machine Co.
Graphic panel, including a Transcope	Taylor Instrument Co.
Hi-Lo pulper, 4000 lb. capacity, equipped with two 200 hp motors	E. D. Jones & Sons Co.
Instrumentation	Taylor Instrument Co.
Jordans (3), Imperial, Accru-Set controls	E. D. Jones & Sons Co.
Magnetic flow meter	Foxboro Co.
Metering systems (2), for color, broke, size, alum and filler	Trimbey Machines Inc.
Motors, electric, including three 400 hp beater motors and three 350 hp jordan motors	General Electric Co.
Piping, all piping over 3-in. dia. of 316 ELC stainless steel	W. L. Rives Co.
Pulp conveyor	Alvey-Ferguson Co.
Screens (2), 3A, each equipped with a 6-in. sumpless and a 2-in. Dirtec tailings unit	Bird Machine Co.
Stock pumps (12), 6-in., 4-in., and 3-in. pumps, open impeller, end suction type	Warren Pumps Inc.
Stock valves	DeZurik Corp.

Paper machine

Agitators, chest	Improved Machinery Inc.
Air compressors	Worthington Corp.
Air system, two hoods, exhaust and supply units, filters, etc.	J. O. Ross Engineering Corp.
Beta gauge, transversing with O-Frame mountings, equipped with XY Bristol recorder	Curtiss-Wright Corp.
Breaker stack, rubber-covered rolls	Rice Barton Corp.
Brokemaster, driven by two 50-hp motors, stainless steel and tile construction	E. D. Jones & Sons Co.
Calender stacks	Rice Barton Corp.
Centrifugal pumps	Worthington Corp.
Chemical pumps	Goulds Pumps Inc.
Dryers (34), 30 paper dryers, 4 felt dryers	Rice Barton Corp.
Felt guides, air-operated	Rice Barton Corp
Fourdrinier, 182-in. wide wire, 30-ft. forming area	Rice Barton Corp.
Headbox, inlet-headbox-flow manifold combination	Valley Iron Works Co.
Headbox pump, 12-in., double suction	Warren Pumps Inc.
Lighting, special fluorescent	General Electric Co.
Lubrication system	Bowser Inc.
Motors and helper drives	General Electric Co.
Paper machine drive, line-shaft, helical gears, differentials	Rice Barton Corp.
Savealls (2)	Bird Machine Co.
Size press	Rice Barton Corp.
Steam control and drainage system, Dual Header Control and Sight-Glass Restrictors	Stamm Drying Controls Inc.
Steam turbine, prime mover of paper machine	Worthington Corp.
Suction box vacuum control system, barometric leg	A. E. Broughton & Co.
Tile chests and linings	Chemical Linings Inc.
Truck, for felt roll handling	Automatic Transportation Co.
Vacuum pumps	Nash Engineering Co.
Winder drives	General Electric Co.

General

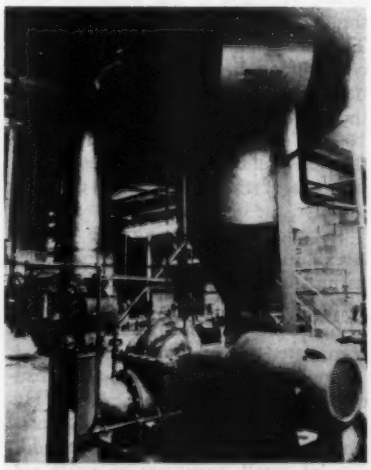
Control panels	Whitmor Co. Inc.
Control panels	Apex Electric Co.
Instrumentation	Bailey Meter Co.
Insulation of piping	Starr Davis Co. Inc.
Load Centers (3), 1000 KVA each	General Electric Co.
Mixers	Mixing Equipment Co. Inc.
Roll grinder, No. 3 GHV, 36-in. capacity, mounted on spring-isolated foundation	United Engineering & Foundry Co.
Sprinkler system	Grinnell Co.
Structural Steel, 500 tons fabricated steel	Dave Steel Co. Inc.
Stainless steel tanks and piping	W. L. Rives Co.
Switchgear	General Electric Co.
Transformer, 3000 KVA	General Electric Co.
Water Pumps	Goulds Pumps Inc.

speeds. Special design features are incorporated in the slice to provide the utmost in caliper and weight control across the sheet and to give the flow conduit unusual versatility to accelerate and decelerate stock velocities in various locations of the flow.

The fourdrinier has a solid forming board, ten deflectors and a motor-driven dandy roll. It has a Duplex breast roll arrangement consisting of a 24-in. primary and 14½-in. secondary roll. The couch is a 36-in. dia. roll with provision to adjust the width of the suction box opening from 6 in. to 10 in. There are two wire stretchers, one equipped with manually operated gear adjustment while the other is hydraulically operated.

A barometric leg vacuum system provides the necessary and accurately controlled vacuum to the individual suction boxes.

The dryer section has 30 high-pressure paper dryers and four felt dryers. These are divided into three sections. The breaker stack, located between the 1st and 2nd dryer sections, has rubber-covered rolls, the top roll being hydraulically operated.



All process flow is controlled by Foxboro magnetic flow meter and DeZurik consistency regulators and valves.

A size press is located between the 2nd and 3rd dryer sections.

The dryer section is equipped with air-operated felt guides. Felt tension is pneumatically controlled.

A completely automatic Brokemaster, driven by two 50-hp motors with belt drives, is located under the dry end of the machine. Its moving parts, made of stainless steel, are housed in a tile-construction tank.

The prime mover of the machine is a 90-hp steam turbine. Power is transmitted by means of a lineshaft through helical gears and differentials.

Steam control and dryer drainage

The steam control and dryer drainage system includes: (1) pneumatic set temperature controllers which individually control the first six wet end dryers; (2) a master graduated temperature controller which resets the six pneumatic set controllers to

(Contd on page 254)

Adhesives in the paper industry

Part V (continued) — Natural rubber and natural resin adhesives

Rubber-based adhesives are characterized by high tack and excellent flexibility. Among the natural resins that find application in the paper industry are asphalt, shellac, rosin and some fossilized resins.

NATURAL RUBBER adhesives are discussed here because of their obvious vegetable origin. Strictly speaking, however, the natural rubber adhesives bear a great resemblance to the synthetic elastomers which are widely used for adhesive bases. Since we have chosen to classify adhesives on the basis of their origin, however, the natural products will be discussed at this point. The applications for rubber-based adhesives are extensive, varying from pressure-sensitive tapes in which they are best known to actual structural types of adhesive bonds.

The rubber-based adhesives are characterized by high tack and excellent flexibility. Prior to World War II, practically all of the elastomeric adhesives were based on natural rubber. Since that time, a wide variety of synthetic materials has demanded the attention of the adhesives chemist. Because of the elastomeric and flexible nature of rubber adhesives, they can be used to make bonds which are to be subjected to strain and deflection.

Actually, the adhesive film, because it is capable of being elongated, absorbs much of the strain, thus preserving the bond.

Natural rubber adhesives all have their origin in rubber latex, which is a dispersion of polyisoprene, normally at a solids content of about 38 per cent. The latex is stabilized by the protein which is normally present, and a small amount of ammonia is added as a preservative.

The latex may be concentrated to a solids content of 60 per cent, and both the dilute and the concentrated materials are available for formulation into adhesives.

In the formulation of adhesives based on latex, additives to increase viscosity, such as gums and water-dispersible cellulose derivatives, are frequently included. Clays, such as bentonite, make the adhesive thixotropic. Additives like glycerol increase the drying time because they are hygroscopic. Tackifiers in the form of resin and oil make the adhesives stickier. Modification with casein or borax tends to give a stronger adhesive bond.

When the natural latex is used, ultimate strength is not achieved until the rubber layer has been vulcanized. Thus, vulcanizers and accelerators must be included in the adhesive formulation. Various recipes are available so that complete vulcanization results at 100° to 120° C. in a few minutes. Although vulcanization increases the strength of the glue line, it does not improve the adhesive bond.

In addition to using the natural latex itself, emulsions of reclaimed natural rubber may be included in the formulation in order to effect economy.

Lacquer-type adhesives may also be formulated from natural rubber. Here, of course, organic solvents are substituted for the water of the latex. Hydrocarbon solvents are normally used such as benzene or naphtha. The addition of small quantities of polar solvents such as alcohol tends to lower the viscosity of the solutions. A number of resins may be included, such as coumarone-indene resins, shellac, ester gum or hydrogenated rosin. These tend to increase the tack and the hardness of the rubber.

Rubber-based adhesives are valuable for adhering a variety of substrates to rubber itself.

Other natural elastomers which find application in adhesives include chicle and balata. Like rubber itself, these are latices from trees which are native to Central and South America. These materials are not used in the form of latices, however. Actually, they are precipitated and are in the form of blocks by the time they reach the United States. Chemically, chicle is closely related to natural rubber, differing only in the configuration of the basic polymer. The largest use for these materials is in chewing gum.

Natural Resin Adhesives

In the category of natural resin adhesives may be included asphalt, shellac, rosin and a variety of miscellaneous materials. Asphalt is a black thermoplastic product obtained largely from the processing of petroleum oils. Asphalt may also occur naturally, although the native product is available in much less volume than the petroleum-based material. Gilsonite is a variety of natural asphalt. The asphalts may be oxidized by air in order to modify their properties. Related to the asphalts are coal tar pitch and pitch from a variety of industries such as fatty acid distillation.

Asphalt finds adhesive uses in the paper and wood industries and in road construction where it binds stone and sand into a cohesive mass. Similarly, it is used for coal briquetting.

The asphalt may be used either in hot melt form, as a solution in hydro-

(Contd on page 254)

Paper Industry Management Association

Over 600 members and guests attended the 40th APPMSA annual convention at the Shamrock Hilton in Houston, Texas.

Sixteen technical sessions and three panel discussions constituted the program devoted to the theme — The Paper Industry Challenge. A mill visit to Champion Paper & Fibre Co. of Pasadena, Texas, was also included in the program.

At the opening meeting, a message from Howard E. Wehr, president, urged the members to vote "yes" on the resolutions to change the organization's name, constitution and by-laws. He stated: "In my humble opinion, these changes are necessary for the continued growth and welfare of your Association". Wehr also stated: "Over the past five years, your Association has grown but not to the extent I would like to have seen it. Perhaps that is the way it ought to be — a challenge that is always before us."

New Officers

The Association's National officers for the 1959-1960 term are: President—A. C. McCorry, St. Regis Paper Co., Tacoma, Wash.; First vice president—Tom S. Coldewey, St. Joe Paper Co., Port St. Joe, Fla.; Second vice president—C. Ives Gehring, Sealright-Oswego Falls Corp., Fulton, N. Y.; Third vice president—Bemis P. Wood, Strathmore Paper Co., West Springfield, Mass.; Fourth vice president—Glen T. Renegar, Container Corp. of America, Philadelphia, Penn.; Fifth vice president—(newly elected) L. W. Murtfeldt, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.; and Secretary-treasurer—Harry E. Weston, 10 N. Clark St., Chicago 2, Ill.

NEW NAME ADOPTED

The members of the American Pulp and Paper Mill Superintendents Association adopted the new name — Paper Industry Management Association (PIMA) — during the Associations 40th annual business meeting held on June 2, 1959. The change in name was deemed in the interests of brevity, to avoid restriction of membership to those carrying the specific title of superintendent and to broaden the scope of activity and operation of the Association. In approving the new name, revisions of the constitution and by-laws were also passed. These revisions were made to modernize the Association's government to suit its needs and to broaden its purpose.

A secret ingredient

"Are you a poor listener? Listening is the key and secret ingredient to a better management". This was stated by Professor Wesley A. Wiksell, Department of Speech, Louisiana State University, in his talk to the general conference.

Supervisors who practice the art of good listening have found that their employees have the highest productivity and the best relationship with the employees.

To improve in this necessary art, Wiksell pointed out that you must first recognize the importance of good listening, then overcome some of the obstacles that block the path to this art. Some obstacles that must be checked and overcome are prejudice, egocentricity and ill health.

When someone is talking, give him the attention he wants and be sincere about it. Don't be impatient; by listening carefully and understandingly, you will get the full meaning of what is being said.

Wiksell also pointed out that the fine art of listening is the most overlooked tool of management. Supervisors must realize that taking the time to give 100 per cent attention to an employee's problems will save time and will improve your relationship with him. When an employee comes to you with a problem, he feels that this problem is important.

New construction material

Kenneth P. Chamberlain of Mannesmann-Easton Plastics Co., during his talk on "New Construction Ma-

terials for the Pulp and Paper Industry", exhibited new construction materials that were made of rigid unplasticized polyvinyl chloride.

The new plastic material was brought from Germany to the United States in early 1947. Seven to eight years ago, the material found its way into the pulp and paper industry field and is now being used very successfully.

Chamberlain stated that the amazing results of continuing research on this new plastic, and industry's keen interest has induced seven major companies to produce this corrosion-resistant material. Steel manufacturers are also moving very fast into the plastics field.

Chamberlain also stated: "In the near future there will be no metal piping in homes and industry — plastics are definitely taking over."

Industry is now, or will soon be, using plastics for: springs; unions; flanges; almost any type of valve including gate valves; drainage fittings; straight-line expansion joints; blowers that never need maintenance; air washers for air pollutions; headboxes; suction box covers; fans; and nuts and bolts.

Hiring for keeps

In presenting his paper — "Hiring for Keeps" — L. C. Menius, personnel director, East Texas Pulp & Paper Co., Evadale, Texas, discussed the important steps to follow in hiring employees.

When machinery and other equipment is purchased for a company, many problems are considered such as cost, benefits, etc. before the final decision of purchase is made. Because of the many problems involved by turnover of employees, including the cost, every employee should be hired with just as many considerations. In other words, hire for keeps.

To find the right person, tools such as college placement departments, magazine advertisements and employment agencies can be used. When describing the job to be filled, be honest about the details, company benefits, the future for the employee in the company and salary. Much time, trouble and cost can be saved if this is carefully done.

The next five steps should be followed in the following order: (1) application blank; (2) aptitude tests; (3) planned interview; (4) past employment records and references, and (5) a physical examination.

After the person has been employed, the job is still not complete. Proper training for his job, helping him with his relations to the company and to his job must also be done.

Most important of all, you must remember that you made a promise to him of future improvements. These promises must be kept.

Superintendent's role

The "Role of the Superintendents in Marketing Our Products" was discussed by Howard E. Whitaker of Mead Corp., Dayton, Ohio.

Whitaker stated that superintendents should have a background on sales and marketing. In sales they must realize that every order is important to the customer and that every customer has a right to expect his order to be treated as such. The superintendent is the one to build a good reputation for keeping promises of delivery dates and the quality of goods delivered. He must also become familiar with his customer's wants and needs.

In marketing, the superintendent should be aware of the new products that are wanted by the public and should also advertise his company's new developments and new products to the public.

"Mills are known by their superintendents", said Whittaker. "A mill with a good reputation is a mill with a good superintendent".

Tomorrow's market

Another highlight address, "Research — Key to Tomorrow's Market", was given by Milton O. Schur, director of research and development, Ecusta Paper Div. of Olin Mathieson Chemical Corp., Pisgah Forest, N. C.

In his address, Schur gave an overall picture of how important the role of research has been in the history of the paper industry.

Today, as new records in volume of production are being chalked up, as the uses for pulp and for paper become more complex or more exacting, and as the problems associated with river and air pollution or with health hazards arise, it becomes necessary to add geneticists, bio-chemists, polymer chemists and other specialists to the research staff. And as our equipment grows larger and larger, more and more complex and operates at higher and higher speeds, we seek the help of physicists, mathematicians, and more recently, electronic computers.

We still need another type of research, one that must unlock tomorrow's market. Two illustrations were given by Shur, i.e. the research developments of the paper towel and the cigarette filter—both of which were needed to meet modern requirements. At the ending, Shur stated: "The two illustrations I have presented to you of how research in the paper industry fashions the key to tomorrow's market, could easily be multiplied many times. However, they are typical and they indicate how the key must be passed on from research to development to production to sales—a path that grows longer, more tortuous, and steeper as industry and markets become more complex and as competition becomes more skillful.

"Put your faith in your research people", stated Shur, "help speed them on as the trail leads to your

Standing from left to right are: Cecil Taylor of Columbia River Paper Mills; Freeman Perry of Ward Paper Co.; Frank Hamilton of Simpson Paper Co.; and A. T. Gardner of Champion Paper & Fibre Co.

Seated at left is John H. Rusch of Chemical Cleaning Inc.; Jerry Le Van of Gulf States Specialties Co.; in center and G. K. Singletary of Eastwood Neally Corp.

Standing at the right is Edward F. Boyle of Central Fibre Products Co.; in center is H. P. Fishwick of Mason Neilan; and at left is R. S. Mead of American Cyanimid Co.

Pictured from left to right are: Milton O. Schur, Olin Mathieson Chemical Corp., Ecusta Paper Div., Pisgah Forest, N. C.; Howard E. Wehr, Mead Corp., Harriman, Tenn. (1958-1959 president of APPMSA); and H. E. Whitaker of Mead Corp., Dayton, Ohio.

Standing from left to right are: L. C. Menius, East Texas Pulp & Paper Co., Evadale, Texas; Ralph Vernon, Liberty Mutual Insurance Co., Houston, Texas; R. F. Caldwell, Olin Mathieson Chemical Corp., Forest Products Div., West Monroe, La.; Seated from left to right are: Joseph A. Paciello, du Pont de Nemours & Co. Inc. and Allan R. Boyd of Huyck Felt Co.

department. In this way, you will make more certain that the key will be ready and will fit when your sales people finally arrive at the gate to tomorrow's market."

Research development on fiber

A paper was given on du Pont's developments in fiber technology for the paper industry by Wilmer E. Hansen, supervisor of the New Products Division, Textile Fibers Department, E. I. du Pont de Nemours & Co. Inc.

The Textile Fibers Department has been working for several years toward adapting variations of the company's commercially-accepted fibers for use on paper machines. Du Pont considers it apparent that unique properties may be imparted to papers with these and other synthetic fibers—some of them likely as yet undiscovered. Considerable work has been done with Du Ponts' Nylon, Dacron and Orlon.

Continuing research has determined that Nylon, Dacron and Orlon can be processed in blends with regular papermaker stocks up to a certain percentage, usually not much higher than 50 per cent to 65 per cent on conventional fourdrinier machines.

It was found that some unique properties can be achieved by using these fibers such as: improved tear strength, fold endurance, bursting strength, dimensional stability and tensile strength.

Fabric-like structures made on paper machines may find application as substrates for coating, impregnations and films.

In order to make a paper of 100 per Nylon, Dacron or Orlon, it was necessary to modify processing procedures.

Unlike cellulosic fibers, synthetic fibers did not swell and cohere to each other sufficiently. Therefore, a resin binder must be used. Some of the important properties that synthetic fiber must possess in order to make them useful for papermaking are: no crimp, a dispersing finish, uniformity of cut length, and lack of fused fiber clumps.

Bolton Award Winners

During the business session, Haigh M. Reiniger, vice president of sales for John W. Bolton & Sons Inc., announced the 10 winners of the 12th Annual Bolton Award Contest, the subject of which was "I Want to be Kept Informed."

Listed here in order from 1st prize through 10th prize are the following recipients: Mrs. Ann E. Burke of Marinette Paper Co.; G. W. Hackett of Container Corp. of America; Jacquelin Fandrey of Bergstrom Paper Co.; James Stolle Sr. of Crown Zellerbach Corp.; Daneen Marilyn Geer Jr. of Sutherland Paper Co.; Robert A. Bagg of Strathmore Paper Co.; Glendora E. Henry of Schmidt & Ault Paper Co.; Norman B. Whittier of Hammermill Paper Co.; George C. Sisler, of Bergstrom Paper Co.; and Alfred A. Mann of S. D. Warren Co.

Seated in conversation here from left to right are: S. S. Harkary of Geigy Chemical Corp.; O. F. Hutchinson of Peter Cooper Corp.; and J. J. DeJongh of Geigy Chemical Corp.

Pictured from left to right are: E. R. Schabloski of Stowe-Woodward Inc.; F. Le Roy Zellers of Chillicothe Paper Co. and also retired past president; and John S. Wilson of Heidrick & Struggles.

From left to right are: Tom S. Coldeway of St. Joe Paper Co.; Bemis Wood of Strathmore Paper Co.; Larry Agnew of Riegal Paper Corp.; and Clayton Walcott of Eastern Fine Paper & Pulp Div., Standard Packaging Corp.

Freeze-free outdoor stock storage tank at Gould Paper Company

A. A. HAGAR

Stebbins Engineering & Manufacturing Co.

The insulated stock tank shows an average rate of heat loss of only 16.92 BTU's per square foot per hour at an outside temperature of −40° F.

LATE in August, 1957, the Gould Paper Co. at Lyons Falls, N.Y., was the victim of a strange set of circumstances which resulted in the loss of about 20 tons of paper stock, the destruction of two stock storage chests and curtailed production through lost storage capacity. The accepted explanation of what happened is that an ancient wooden chest 50 ft. o.d. by 34 ft. high (nestled next to a half-moon retaining wall) developed a large leak due to stave failure next to the retaining wall. The stock was forced between the tank and the wall, the resulting pressure pushing the entire tank off its foundation. It crashed into an adjacent empty vessel and both were washed into the nearby river.

For years Stebbins Engineering & Manufacturing Co. of Watertown, N.Y., had been studying the possibility of constructing insulated masonry tanks out-of-doors in extremely cold northern areas. The situation at Gould, where temperatures go down as low as 40° below zero, definitely called for such construction.

Several factors precipitated a decision to purchase a Stebbins reinforced masonry tank. Operators had been troubled by stock freeze-up in the old vessel, with accumulations often amounting to 12 in. on the wall during the winter season. Eliminating this stock freeze-up was most desirable. A permanent structure with low maintenance cost was preferred to a unit with a shorter life expectancy. Cleanliness in the high grade paper being manufactured at Gould was also essential and an interior glazed tile lining would provide a clean corrosion-resistant surface. As a final consideration the cost was less than that of other tanks providing moderately satisfactory characteristics.

Construction of the tank

Construction economy results from the fact that formwork, such as required for a conventional concrete vessel, has been eliminated. Stebbins progressively lays up the interior shell tile lining and then the exterior insulation in their respective joint materials. The reinforced concrete core is then placed gradually using the inside and outside shells as forms. When necessary, special concrete additives are used to eliminate dry joints. The result is a properly insulated, monolithic concrete structure with a glazed tile interior.

Many problems had to be resolved before this tank could be built. Naturally the existing foundation was to be used. A close inspection after debris had been cleared showed definite cracking and differential settlement of the foundation. No drawings were available to determine the strength of the existing pad. Test cores were cut and removed to check the concrete thickness and type of fill beneath it. Everything pointed to the fact that further settlement and leakage would result should the foundation be used as it was.

To obtain the desired capacity of 50 tons of air-dried stock at 3 per cent consistency in the area available, the size of the new vessel had to be 48 ft. dia. by 37½ ft. high. The height included a maximum depth of floor fill of ± 2 ft. 10 in. around the outside periphery, sloping 2 ft. per foot to a 20 ft. diameter panel in the center. This center panel sloped ¼ in. per foot to an 18-in. pump suction located at the exact center of the floor. The minimum depth of floor fill and lining was 6 in.

All floor fill was heavily reinforced to act as a concrete raft, allowing even distribution of the load to the old foundation. This eliminated the possibility of further differential settlement. A 2-in. tile lining was installed over the new foundation slab.

Standard Stebbins design formulae were used to determine the required wall thickness of 19 in. at the base of the tank and the desired minimum wall thickness of 11 in. at the top. To the structural core was added the required 2-in. insulation, making the total thickness at the base 21 in. and at the top 13 in. For economy an intermediate section was constructed 17 in. total thickness.

The chest contains groundwood stock which enters at temperatures ranging from 80° F. to 90° F. pH values vary slightly from 5.2 to 6.0. For these conditions all interior surfaces of the floor and side walls were lined or constructed of Stebbins Semplate (R) or Semblok (R) with all joints of specially treated Portland cement and sand mortar.

Many types of covers were considered. A wooden cover was selected supported by treated wooden trusses which were, in turn, supported by the masonry tank. The cover was also insulated with 2-in. fiberglas and weatherproofing to hold heat losses to a minimum. Special anchor bolts were grouted into the wall to secure the anchor plates and cover to the tank.

With the exception of one or two very minor repairs right after the unit was placed in operation, the first insulated masonry tank, constructed as

described herein, has given 100 per cent satisfactory service through two extremely rough winters and one summer. No freezing inside the tank has occurred and no evidence of thermal cracks has developed.

Thermal performance of the tank

An inspection of Fig. 1 shows why this tank operates so satisfactorily and why similar units can be used in many other northern plants to give equally good service. Fig. 1 shows the thermal gradient through the wall section, assuming agitated stock and static conditions, when the stock is 80° F. and the outside air is 40° below zero. This is indeed an extreme condition but one which could conceivably exist.

For purposes of computation the average total wall thickness of 17 in. was used.

The temperature of the inside tile face, T-1, is 76.5° F.; the temperature at the inside concrete face, T-2, is 71.3° F.; the temperature inside insulation, T-3, is 52.2° F.; and the temperature outside insulation or on the outside skin, T-4, is −34.4° F.

Two important points can now be noted:

1. The flat temperature gradient through the wall allows the concrete core to be designed with almost complete disregard for the outside temperature and the resulting thermal stresses normally present in uninsulated vessels.
2. At no point in the structural portion of the wall does the temperature drop below freezing. This eliminates troublesome stock freeze-ups and progressive wall deterioration from freezing.

In addition to the two major benefits described above, there is the added benefit of heat saving and the ability of such a vessel to stand idle with stock for extended periods without freezing. Under the extreme conditions described the average rate of heat loss through the 17-in. section is 16.92 BTU's per square foot, per hour. The heat loss through the 21- and 13-in. sections will average about the same. By computation we find that only 94,000 BTU's are lost through the wall each hour.

Fifty tons of stock at 3 per cent consistency contain about 3,230,000 lb. of water. In order for the contents to cool 1° F., a like number of BTU's must be dissipated. Assuming that heat will be dissipated through the insulated cover at about the same rate as through the wall, it will take about 26 hr. to cool the contents by 1° F., or a one week shutdown would result in a temperature drop of only 7°.

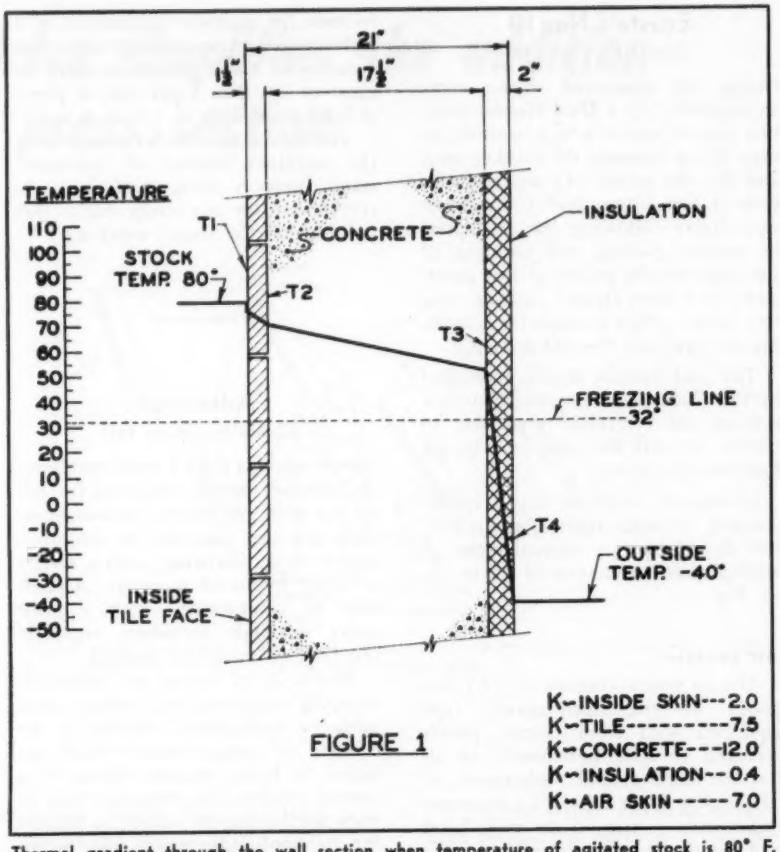
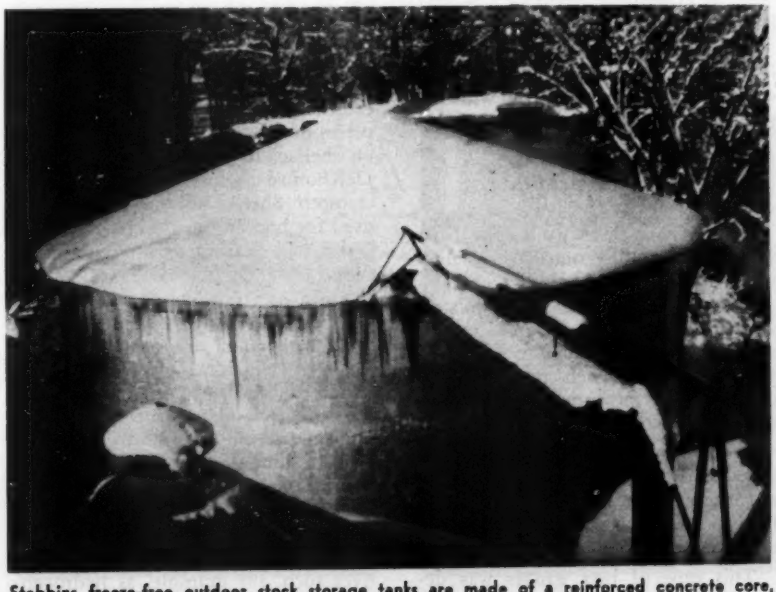


FIGURE 1

Thermal gradient through the wall section when temperature of agitated stock is 80° F. and outside temperature −40° F.



Stebbins freeze-free outdoor stock storage tanks are made of a reinforced concrete core, glazed-tile interior, and 2-in. insulation on the outside.

Ecusta's No. 10

(Cont from page 247)

change the graduated drying curve as required; (3) a Dual Header moisture control system which controls the nine dryers between the breaker stack and the size press; (4) separate controls at low temperature for the first two dryers following the size press to prevent picking and cockling of the light weight papers at this point; and (5) a Dual Header moisture control system which controls the remaining six dryers in the 3rd section.

Top and bottom dryers controlled by the Dual Header moisture control systems are controlled separately to correct for curl that may exist in the light weight papers.

Condensate from all dryers is discharged through sight glass restrictors directly into a vacuum tank operating under a vacuum of 15 to 20-in. Hg.

Air system

The air system consists of: (1) two hoods of the open-transite type equipped with front curtain panels arranged to slide horizontally to allow for removal and replacement of the endless dryer felts; (2) three exhaust units — two on the main hood and one on the after dryer hood; (3) a felt supply unit which supplies air to the bottom return felt; (4) a wet end exhaust unit for summer comfort; (5) two air supply units which deliver tempered air to the room and roof areas through grilles and diffusers; (6) four man coolers located in the tending aisle for personal comfort; (7) calender cooling; and (8) trim conveying system.

All fresh air taken into the system is cleaned by automatic filters and all supply systems are equipped with automatic control.

Basis weight and profile control

A traversing beta gauge for basis weight and profile control is installed between the last dryer and the calender stack. It features O-Frame mounting which enables the source and detector heads of the gauge to scan completely across the web, presenting accurate profile measurement by actuating an XY recorder.

When cross sheet variations are detected, the operator is able to locate the measuring head over the heavy or low spots and make immediate slice adjustments as required.

This type of beta gauges was developed with special radiation sources to meet the accuracy requirement of a light weight paper manufacturer. The accuracy of these gauges involves an error of less than 1 per cent of paper as light as 14g/m².

The beta gauge further incorporates the standard feature of automatic standardization every half hour to compensate for any errors due to dirt build-up on the source windows.

Adhesives

(Contd from page 248)

carbon solvents or as a water emulsion. Asphalts are used as adhesives for felt or for felt and metal combinations. They are also used for the manufacture of floor tile, along with a variety of other hydrocarbon resins. Asphalt may be compounded with a great many materials including vegetable oils such as linseed or tung oil.

Shellac is, of course, an important, naturally occurring resin which finds adhesive applications. Shellac is the exudate of certain insects which are native to India. Because shellac is a natural product, its properties tend to vary. Shellac may be refined by bleaching for application where color is important.

One of the outstanding characteristics of shellac is its solubility in alcohol. It was one of the original materials used in phonograph records, although it has been replaced largely by vinyl resins. Early sealing waxes for envelopes were based on shellac. It can be formulated with a wide variety of other alcohol-soluble materials, and one adhesive formulation comprises shellac, castor oil and a natural gum known as sandarac gum. "DeKhotinsky cement", widely used for joining pieces of laboratory apparatus, is based on shellac. In addition to the shellac, DeKhotinsky cement includes tars and creosote. Shellac adhesives have been used for bonding metal, ceramics, mica and a wide variety of nonporous surfaces.

Rosin and a wide variety of rosin derivatives are extremely important in the formulation of many adhesives. Rosin is a natural product obtained either from pine stumps or pine trees or from tall oil, a byproduct of the kraft paper industry. Rosin itself is a complex mixture of organic substances, one of the important ones being abietic acid. Rosin is acidic because of the presence of carboxyl groups. It may be converted into many derivatives such, for example, as hydrogenated rosin or disproportionated rosin. Similarly, the carboxyl group may be esterified with methyl alcohol or with higher polyhydric alcohols such as glycerol or pentaerythritol. The glycerol ester of rosin is known as ester gum.

Rosin and its derivatives are excellent tackifying agents and are frequently used for this purpose. In addition, they have adhesive character themselves, although rosin is a very brittle substance and must be plasticized for best results. Rosin is used as an extender for more expensive resins. Rosin can be emulsified to obtain water dispersions which may be combined with starch, casein, glue and with resinous emulsions such as polyvinyl acetate.

Rosin itself has been used in numerous adhesive formulations. For example, an adhesive for moisture-proof cellophane can be formulated from rosin, varnish, turpentine and diethylene glycol ether. Rosin esters are important modifying agents for nitrocellulose. Thus, nitrocellulose, together with a plasticizer and ester gum, provides a basis for a variety of adhesives.

Rosin is also important in the formulation of rubber-based adhesives where it acts as a fluxing agent so that ingredients normally incompatible with the rubber may be included. Rosin is also a tackifier for the rubber.

The tackifying function of rosin in rubber-based adhesives, particularly of the pressure sensitive type, has been discussed by Wetzel (9). Thus, when rosin was used with unvulcanized natural rubber, it was found that maximum tack occurred at a level of 50 to 75 per cent rosin.

A variety of fossilized resins are available, which in some respects resembles rosin. Copal resin is one of these which has been used widely by the varnish industry. Copal with castor oil provides an adhesive which has been recommended for use on tape. Gum elemi is another such fossilized resin as is manila gum. In one adhesive formulation, manila gum is blended with blown linseed oil and dissolved in denatured alcohol. Bentonite is added to make the adhesive thixotropic. It should be pointed out that the term, gum, when applied to materials like copal and manila gum, has an entirely different connotation than it does when applied to materials like tragacanth and acacia. These latter materials, which are truly gums, are water-dispersible or water-soluble products. Copal, on the other hand, is soluble only in organic solvents and is not truly a gum, although usage has made this confusing nomenclature common.

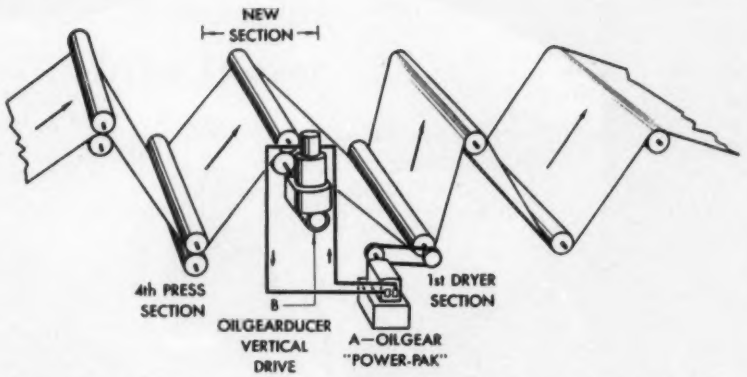
Hydraulic drive simplifies the addition of a paper press section

TO IMPROVE the finished surface of certain types and grades of paper, a manufacturer decided to insert a new sizing and smoothing press section between the fourth press section and first dryer section of one of their paper machines. Processing the wet sheet on the new section required that:

1. The input unit drive be direct connected to the plasticizer roll.
2. The new section drive rpm remain in the same preset ratio with the first dryer section roll regardless of machine speed.
3. The new section to machine speed ratio be variable to increase or decrease tension on paper.
4. The new section drive speed remain constant (less than 6 per cent variation) when pressure is increased or decreased on plasticizer roll.
5. The new section drive be able to stop without use of clutches while remainder of machine continues to process paper.
6. The section be controlled from a remote pushbutton station.
7. The drive fit within the limited space available.
8. "Rebuilding and downtime" of paper machine be kept to a minimum.

The drive, control, space and rebuilding problems were solved with Oilgear "Any-Speed" drive because: (1) a standard input unit (a Type "DE" variable displacement pump with electric remote control and reservoir) fits into the limited space available and was easily driven from the first dryer roll; (2) a standard Oilgearducer output unit (a constant displacement motor with integral right angle gear reducer) was direct connected to the plasticizer roll; (3) a simple, pushbutton station for controlling the new section was mounted convenient to operator; and (4) rebuilding was simple and "downtime" was held to a minimum.

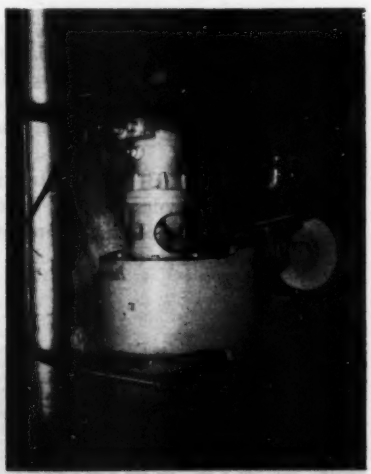
Being a positive displacement hydraulic drive, the plasticizer roll rpm remains in same ratio with the first dryer roll regardless of machine speed. Plasticizer roll rpm remains stable (within 0.5 per cent variation) when load on the new section is varied from minimum to maximum. From a simple, remote, pushbutton station, the operator commands the electric pilot control motor to increase or decrease the pump displacement and change the hydraulic motor speed. This changes the new section to machine speed ratio to precisely increase or decrease the tension on the paper. This station also has pushbuttons for starting or stopping the new section independently while the paper machine is running and gauges to indicate the temperature and exact load on the drive at all times.



Oilgear pump A is driven from the first dryer section to keep the new sizing and smoothing press section in direct relation to the dryer section speed.

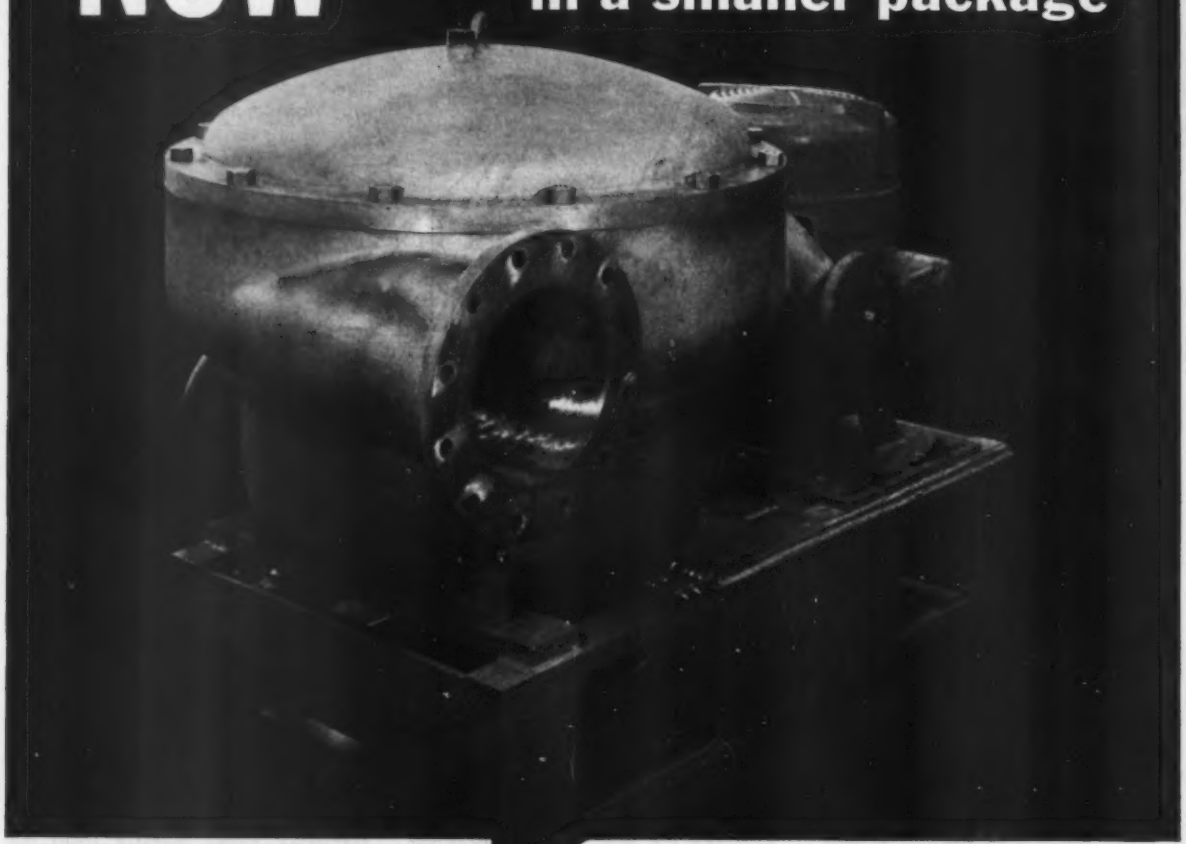
Now the paper machine serves a dual production purpose. It can produce paper with an improved finished surface with the aid of the added sizing and smoothing operation. It also can produce paper without putting it through the plasticizer section by merely depressing a pushbutton to stop the new section and threading paper directly from the fourth press section to the first dryer section. In over four years of continuous, high-speed service, there has been no reported maintenance.

Control dials indicate speed, system pressure and temperature



Vertically mounted type "H" Oilgeareducer with right angle gear reducer.

NOW — a "good thing" comes in a smaller package



the Model 10

BIRD CENTRISCREEN

Here is a new, small size Bird Centriscreen with all the design, construction and performance advantages that have made its big brother, the Model 14, such an outstanding success.

The Model 10 Centriscreen handles about half the volume of the Model 14 — up to 2800 gpm or more, depending on the character and consistency of the stock.

The Model 10 has been thoroughly field tested. Its shive and speck removal efficiency equals that of the Model 14. *What more can be said!* It is ideal for use ahead of smaller Fourdriniers and on cylinder machines with a screen for each mold.

Large or small, you need this more modern, more effective, more economical Screen. Ask us for recommendations, layouts and estimates.

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BIRD MACHINE'S 50th YEAR OF SERVICE TO INDUSTRY

CURRENT COMMENTS

Survey of future capacity . . . Newsprint consumption increases . . . Strike is over

By WARREN B. BULLOCK

A survey of future capacity of the paper and paperboard industries has been completed through cooperative studies by the National Paperboard Association, the American Paper & Pulp Association and the United States Pulp Producers Association. On the basis of operations for 313 days per year, or six days per week, the forecast envisions a total capacity of 39,344,000 tons in 1961 as compared with the 1957 total of 34,845,000 tons and the 1958 total of 36,749,000 tons.

In 1959 there is an anticipated increase of 709,000 tons achieved by improvements in existing machines and 489,000 tons to be provided by newly installed machines. Of the 1961 anticipated capacity of over 39,000,000 tons, 15,987,000 will be in paper production and 18,997,000 tons in paperboard, the balance being in building papers, building boards and wet machine boards. On the basis of these figures in case of maximum demand, the industry's capacity, computed on a basis of 337 days per year of 24 hrs. each, the capacity total would reach 42,227,000 tons. In analyzing these figures it must be remembered that never, even in war time, have the industries exceeded 99 per cent of the capacity as computed on the basis of a 313-day year.

Export committee meets

A special meeting of the industry's Export Committee was held June 10 to explore the problems resulting from the formation of the European common market, which may serve to restrict the market for exterior paper products in behalf of the producers within the economic union.

Senator Kennedy was absent

Forty lumber and pulp producers were incensed at Senator Kennedy of Massachusetts when he failed to appear at a scheduled session of his own sub-committee on labor to hear testimony against his minimum wage bill. Instead of being present at the scheduled session, Senator Kennedy went to Boston and failed to arrange with any other member of his subcommittee to take the testimony. Senator Clark of Pennsylvania, a member of the Senate Labor Committee, went in to pinch-hit for the missing host. This adds fuel to the charge that Senator Kennedy's quest for the Democratic nomination for President is keeping him out of Washington too much of the time.

Newsprint consumption rises

Newsprint consumption appears to be resuming its upward march, according to an industry concensus for the first quarter of the year. The rise this year will be about five per cent, as against a long-term average annual gain of three per cent. Unused capacity is now estimated at over 1,500,000 tons annually. According to the same announcement from the Newsprint Information Committee, newsprint mill earnings, as shown in an analysis of annual reports for 1958 of 21 companies, were off 12.7 per cent from 1957 levels which were in turn 22.9 per cent under the 1956 figure.

Strike is over

Wage contract negotiations on the Pacific Coast were quickly and satisfactorily concluded with an overall wage increase to three per cent for some 200,000 employees of 46 mills. The four-month-old strike of employees of the West Virginia Pulp & Paper Association was ended with a lost production of book and similar papers of 250 tons per day.

APPA promotes industry

In its efforts to publicize the importance of the paper industry to the public, the trade promotion section of the American Paper & Pulp Association has distributed to a wide field, a packet of informational material to help teachers discuss the industry in their classes.

Financial Report

Paper mill securities were generally lower in early June from the prices quoted in May. In general, the paper mill issues drifted lower to a greater extent than the paperboard stocks.

Stock and Bond Quotations
New York Stock Exchange—Stocks

Closing Prices	June 10, 1959	May 11, 1959
American Can	42⅜	43⅞
Same Pref.	36⅝	38
Celotex	48½	41¾
Same Pref.	* 18½-19½	* 19¼-19¾
Certain-Teed	14⅜	15⅞
Champion P. & F.	40½	43
Same Pref.	* 90½-91½	93
Chesapeake of Va.	42¼	35⅜
Container	26½	23⅜
Same Pref.	* 90-91	* 92-93
Continental Can	45⅝	46¾
Same Pref.	81	90
Crown Zellerbach	50¾	56
Same Pref.	91½	94½
Diamond-Gardner	31¼	30¾
Same Pref.	30	—
Federal Paperboard	46¼	50
Same Pref.	21¾	22
Fibre Paper Board	51¼	52⅜
Great Northern	50	51
Hammermill	28½	30¾
International	118¼	112
Same Pref.	* 90½-92½	90-92
Kimberly-Clark	65⅛	62¾
McAndrews & Forbes	30¼-31	30
Masonite	43¼	43½
Mead Corp.	42¾	45
Same Pref.	* 90-93	92⅛
Minnesota & Ontario	34¾	34¼
Oxford Paper	34¼	37
Same Pref.	95½	97
Rayonier	24⅛	24¼
Riegel Paper	34½	34⅜
St. Regis	47⅛	48
Same Pref.	96	* 95¼-97½
Scott Paper	77¾	80
Same $4 Pref.	* 85½-87	* 90-91½
Same $3.40 Pref.	* 77½-79	* 80-81
Sealright	33¾	40¾
Standard Packaging	31⅛	32½
Same $1.60 Pref.	* 90-98	97
Same $1.20 Pref.	35½	35½
Sutherland Paper	41	46
Union Bag-Camp	47	44½
United B. & C.	32	34
United Wallpaper	* 8¾-9	9⅞
Same Pref.	* 18-19½	18¼
U. S. Gypsum	107¾	108¼
Same Pref.	151¾	*156¼-158
West Va. P & P	44¼	42½
Same Pref.	96¼	* 96⅜-98

New York Stock Exchange—Bonds

Champion P & F 4¾%	109	114
Champion P & F 3¼%	—	93½
Diamond Gardner 3%	94½	—
Kimberly-Clark 3%	91	93½
Mead 3%	—	—
Oxford 4¾%	108	112
Scott 3%	103⅛	108½

American Stock Exchange—Stocks

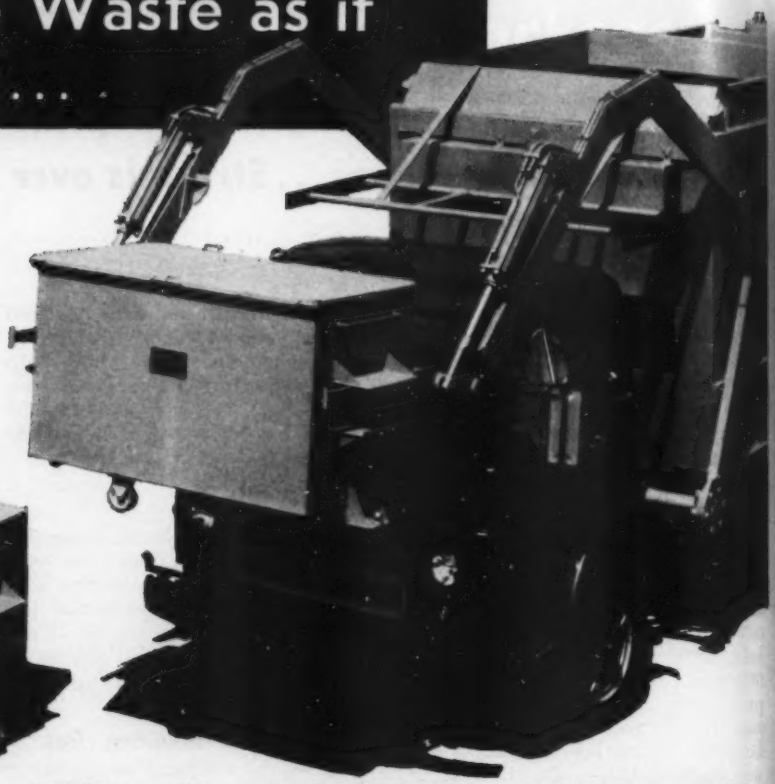
Allied Paper	12½	12¾
American Writing	35¼	35¼
Brown	12¾	13⅛
Puget Sound	22¼	23

*Closing Bid and Asked Prices

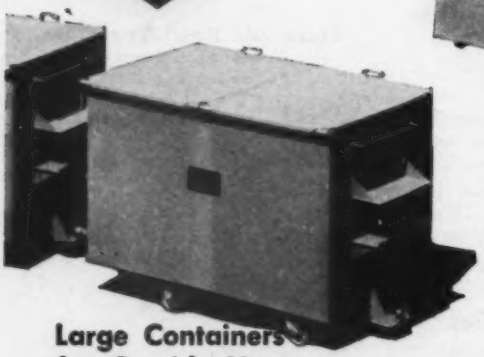
cut disposal costs by two-thirds...

Containerize Waste as it Accumulates....

Patents Pending



Small Tracking Containers for Indoor Use...



Large Containers for Outside Use...

Mfd. By DEMPSTER BROTHERS Inc.

Self-Loading DEMPSTER-DUMPMASTER Handles 6 Sizes of Containers...

If you're using boxes, bins, cans or carts to handle or store big-volume waste and refuse, you can reduce costs by more than two-thirds with the new DEMPSTER-DUMPMASTER System of waste storage and collection.

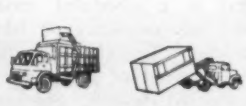
One Dumpmaster serves any number of detachable metal containers placed at waste accumulation points. Making its rounds, the Dumpmaster picks up each container, in turn, empties the contents into its packer body and compresses the material to a fraction of its former volume assuring big pay loads on every trip to the disposal area.

The DEMPSTER-DUMPMASTER is economical! One man operation. It's safe! Clearance lifting arms never pass the cab windows, can't injure operator. Containers can be used indoors or outdoors, on ground, below grade or on a dock.

This system is also available on a monthly fee basis through a nearby DEMPSTER-DUMPMASTER equipped private hauler. (name furnished on request).

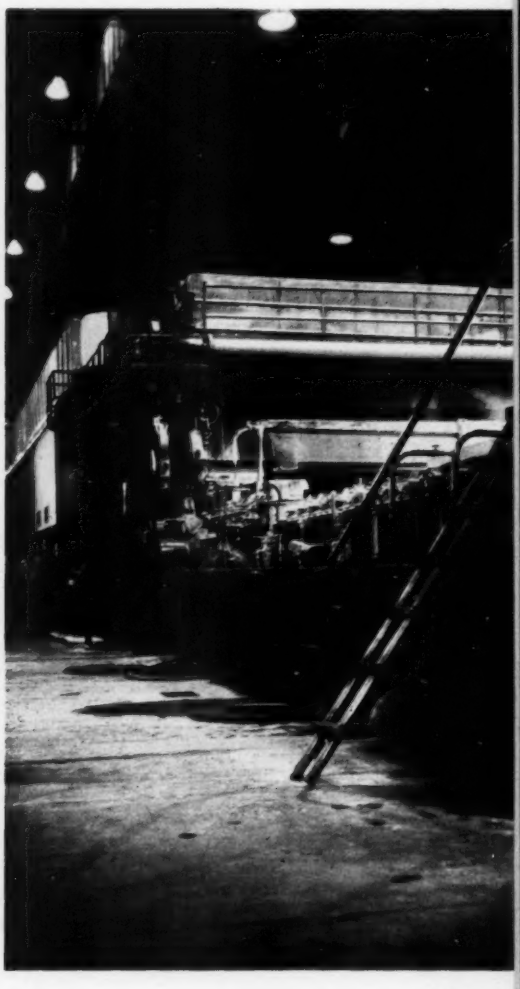
WRITE TODAY FOR FREE BROCHURE

DEMPSTER DUMPSTER® SYSTEMS



Dept. PI-7 DEMPSTER BROTHERS, Knoxville 17, Tennessee

DRAMATIC MOMENTS IN PAPER-MAKING PROGRESS



Completely new or completely rebuilt, the first production run on a paper-making machine is an exciting event to everyone concerned. To Fraser Paper, Ltd., owner of this rebuilt Fourdrinier machine, the speed of its first run (1500 f.p.m.) and its faultless operation are deeply satisfying.

To Pusey and Jones of Wilmington, Delaware, who did the work, the event is no less important. A completely new Fourdrinier with 228-inch-wide wire 100 feet long was installed, after pre-assembly at the Pusey and Jones plant. A vacuum pickup and an after-dryer section with completely enclosed gearing were added. The entire machine, from headbox to reel, was carefully inspected and parts replaced whenever necessary.

Pusey and Jones can serve you, too, by rebuilding your present machine, designing and building a new one, or by supplying such devices an an Automatic Air Guide System or a Differential Hydraulic Drive.

Left, Above: *Wire width of rebuilt machine is 228 inches, wire length, 100 ft. Machine is in Fraser Paper's mill at Madawaska, Maine.*

Right, Above: *Overall view of 2000 f.p.m. machine which was completely rebuilt by Pusey and Jones for Fraser Paper, Ltd.*

THE PUSEY AND JONES CORPORATION

WILMINGTON 99, DELAWARE

EXPORT AGENTS: THE PUSEY & JONES INTERNATIONAL CORP., 90 BROAD STREET, NEW YORK 4, NEW YORK, U.S.A.

. . . Fluid Power news

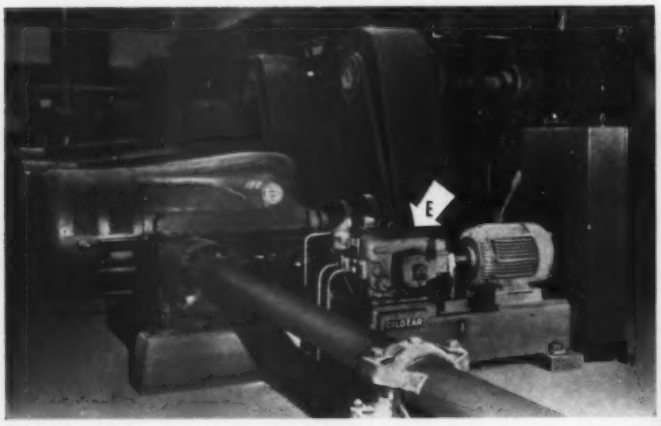
No. 12,104
OILGEAR
SOLVES
SPEED
CONTROL
PROBLEM

From Oilgear Application-Engineering Files

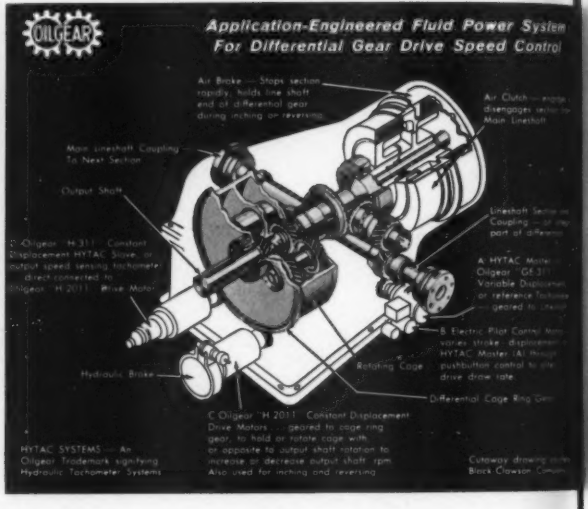
HOW HYTAC SYSTEMS CONTROL DIFFERENTIAL DRIVE SPEEDS ON NEW 190" PAPER MACHINE

USER: *Sonoco Products Company, Hartsville, South Carolina*
BUILDER: *The Black-Clawson Company, Inc., Paper Machine Division, Watertown, New York*

DATA: To design and build a differential-type drive, Black-Clawson engineers outlined the following over-all requirements: 1. To be rugged, simple, and have easily replaceable parts. 2. Speed variation device to control sizes from 150 to 1200 hp, and be capable of performing additional functions — inching, reversing, and slack take-up. 3. Device must maintain synchronous speed regardless of load or temperature changes. 4. Complete drive must be compact, clean design • After solution of gear mechanism problems, the following additional requirements were outlined for the speed variation system: 1. Simple, remote, section control panels, with all controls interlocked. 2. Draw range of at least ±4½%, precisely variable. 3. Must be capable of 24-hour continuous drive service with an absolute minimum of maintenance. 4. Would prefer one source, one responsibility for entire control system. (Mechanical, electrical, and hydraulic systems were investigated.)



A portion of Sonoco Products Company's new "Mr. Mac" — 190" (170" trim) Black-Clawson paper machine designed to produce 9-pt., semi-chemical corrugating board at speeds up to 1500 fpm. "Mr. Mac" is the first paper machine to be fully equipped with differential gear drives on which speed is hydraulically controlled and operated. Three of these new Oilgear Fluid Power Controlled, Black-Clawson differentials are shown above with one of the accompanying Oilgear "Power-Paks" clearly visible. These drives are used on the couch roll, first press, second press, first dryer section, breaker stack, second dryer section, calendar stack, and "autoflyte" reel . . . a total of 8 drives—5 rated at 150 hp, 3 rated at 300 hp.


OILGEAR
Application-Engineered Fluid Power System
For Differential Gear Drive Speed Control
Air Brake — Stops section rapidly, holds line shaft end of differential gear during inching or reversing
Air Clutch — engages disengages section to Main Lineshaft
Main Lineshaft Coupling To Next Section
Output Shaft
Lineshaft Section or Coupling — or any part of differential
C Oilgear "H 2011" Constant Displacement HYTAC Slave, or output speed sensing tachometer, direct-connected to Oilgear "H 2011" Drive Motor
A HYTAC Master Oilgear "DX 2011" Variable Displacement or reference Tachometer — geared to lineshaft
B Electric Pilot Control Motor varies stroke displacement of HYTAC Master (A) through pushbutton control to alter drive draw rate
Hydraulic Brake
Rotating Cage
Differential Cage Ring Gear
C Oilgear "H 2011" Constant Displacement Drive Motors — geared to cage ring gear, to hold or rotate cage with or opposite to output shaft rotation to increase or decrease output shaft rpm. Also used for inching and reversing
HYTAC SYSTEMS — An Oilgear Trademark signifying Hydraulic Tachometer Systems
Cutaway drawing of the Black Clawson Company

SOLUTION: Application-Engineered *HYTAC SYSTEMS* arranged through teamwork between Oilgear and Black-Clawson engineers throughout the stages of design, testing, application, and actual installation.

Black-Clawson states — *"operating characteristics highly important to any papermaking machine are obtained through a unique hydraulic motor differential cage drive and a HYTAC SYSTEM (hydraulic tachometer feedback control arrangement). Significant features of this HYTAC drive are: 1. Machine sections can be inched or reversed with line shaft running or down. 2. No helper motors needed — no belts or chain drives involved. 3. Accurate speed regulation. 4. Precision draw control for all applications — 9% draw range. 5. HYTAC SYSTEM maintains speed regardless of load or temperature changes. 6. Hydraulic mechanism and control panels can be located remotely from drives. 7. Complete drive control interlocked. 8. Load on machine sections indicated by pressure gages on drive. 9. Compact, durable construction. 10. Absolute minimum of maintenance required."* The reasoning that led to selection of HYTAC SYSTEMS has also been clearly stated by Black-Clawson engineers, as follows: *"Mechanical drives had many serious drawbacks, such as horsepower limitations and the inability to perform the desired functions. Choice between electric or hydraulic drive proved more difficult . . . necessity that electronic controls circuits would be required to maintain accuracy, and the larger size of the driving units were the deciding factors in favor of the hydraulic drive. To determine size, an analysis was made . . . here again hydraulic drive proved its superiority, since the drive motor could be driven in both directions. Tests proved that the drive was even more accurate than our original expectations . . . regulation between zero and rated load was only ±0.005%. Under conditions of constant load and speed, a variation of ±0.002% could also occur . . . when added together, maximum regulation is*

HOW IT WORKS: Fluid from lineshaft-driven master tach (A) gives differential drive speed command to control on Oilgear "DRX-2011" two-way, variable displacement pump (E), indicated in photo, left, of Oilgear "Power-Pak" installation. Slave tach (D) feeds back a flow signal proportional to actual differential drive speed. When main lineshaft speed increases or decreases, fluid flow from Master Tach (A) automatically increases or decreases correspondingly to command differential drive to follow lineshaft speed change. Through local or remote pushbutton stations connected to electric pilot motor (B) on Master Tach (A), operator can increase or decrease speed of each section infinitely up to 9% of prevailing lineshaft speed. When differential cage is rotated with, or in same direction as the output shaft by motors (C), output shaft speed is increased. If cage is rotated in the opposite direction by motors (C), output shaft speed is decreased. All factors, such as change in load or temperature, are automatically compensated by these HYTAC SYSTEMS to maintain exact, set degree of section synchronization with lineshaft at all times.

Accurate synchronization of multiple, tandem operations; combining separate operations to handle webs or sheets — soft, fragile at one point — strong at another; or continuous webs when tension affects quality . . . all need more than conventional drives and controls . . . they need the precision of HYTAC SYSTEMS, or other Oilgear "Any-Speed" drives and controls!

For practical solutions to YOUR linear or rotary Controlled-Motion problems, call the factory-trained Oilgear Application-Engineer in your vicinity. Or write, stating your specific requirements, directly to . . .

THE OILGEAR COMPANY
Application-Engineered Controlled Motion Systems
MILWAUKEE 4, WISCONSIN

NEWS of the INDUSTRY

Wood to Mill by Pipeline

Pipelines are now being considered by Canadian newsprint producers as a cheap means of getting wood from forests to their mills.

The pipeline transportation is done by chipping the wood into small pieces and then flushing it through the pipes by water. Tests have shown that an 8-in. pipeline can supply a good-sized newsprint mill with all the wood it needs.

Newsprint manufacturers think pipe transportation may prove more economical than the traditional method of carting logs to lakes and rivers and then floating them downstream to the mills.

Senford L. Cluett, inventor of the Clupak paper process is pictured at the left as he greets Gerald E. Amerman, president of Clupak, Inc. Clupak Inc. is one of the leading U. S. corporations to be invited to participate in the U. S. Patent Office Exhibit which opened on May 12 in the main lobby of the Department of Commerce building in Washington, D. C.

New Freeze Process

A new process for freeze concentration of sulfite liquor is currently under investigation by the Sulphite Pulp Manufacturers' Research League.

This process, developed by Herbert H. Clark, a consulting engineer in Oshkosh, Wis., is said to provide practical solutions for the technical difficulties that arose during previous attempts by other researchers.

Laboratory-scale equipment was used by Clark in a recent demonstration for the League's technical committee. Clark is now constructing a pilot plant with a capacity to concentrate 2 gpm by his freeze process. Sulfite pulp manufacturers facing the twin spent liquor problem of stream pollution and wasted raw material are closely following the course of these experiments.

Resins Committee Organized

The Packaging Institute has announced the organization of a Resins Committee. The formal organizational meeting with election of permanent officers, is to be held immediately before the Packaging Institute's Annual Forum in New York City, which is scheduled for November 16 through 18.

The overall objective of a resins committee would be: To establish basic criteria on resin materials to benefit the packager. This is to be accomplished through the cooperation of the packager, converter, raw materials supplier and machinery supplier. The committee is expected to follow the broad approach to important considerations in the resins field.

Manila Firm Gets U. S. Loan

A $5,300,000 loan has been approved by the United States Development Loan Fund for the building of a plant in Manila to make paper from bamboo.

Bataan Pulp & Paper Mill Inc. will use the loan to buy machinery and erect a plant to make paper to be used for printing, wrapping and stationery. It was understood that United States and German paper-making machinery is being considered. The plant is expected to employ 600 persons.

This is the third big loan to the Philippines since President Carlos P. Garcia was promised up to $50 million in D.L.F. credits last summer.

Non-skid Paper Surface Developed at Armour

Armour Research Foundation of the Illinois Institute of Technology has recently developed a new economical, non-skid paper surface.

Developed for Cromwell Paper Co., the non-skid surface is embossed on the paper in a specially designed pattern and said to increase friction by several hundred per cent.

The new surface has a special advantage over non-slip papers that are coated with either plastics or resins in that it is less expensive. This is of particular importance to firms using bags or wrapping material in great quantities.

Newsprint From Southern Hardwoods

Noralyn Paper Co. Inc. of Baton Rouge, La., has successfully developed a newsprint sheet made from Southern hardwoods.

The newly-developed newsprint, made from seven species of hardwood, was said to be a little softer and more opaque than newsprint from only three hardwoods tested on the same presses last fall. It was also stated that the sheet has a brightness in the measure of 65 and 66 as compared to 56 and 58 for most standard newsprint.

Box Manufacturers Want Improvements

Delegates attending the 41st annual meeting in Philadelphia, May 20 through 24, of the National Paper Box Manufacturers Association expressed deep concern over modernizing their plants.

A special report was presented to the convention by the Plant Mechanization Committee headed by R. M. Welch, president of Barger Box & Printing Corp.

This committee was organized two years ago for the purpose of improving existing box machinery and determining what new machinery was desired by the association members—

with the primary thought of reducing box manufacturing costs to maintain the industry's competitive position.

The report was the results of a survey made by this committee. The survey covered some very good ideas for needed improvements. The association has announced that copies of the survey are still available to any interested parties.

Sherman Paper Grants License

Sherman Paper Products Corp. of Newton Upper Falls, Mass., has announced a license agreement with the Sorg Paper Co. of Middletown, Ohio, for the manufacture of latex-coated cohesive papers under Sherman's existing patents.

Sorg Paper Co. is a paper mill producing specialty paper for the printing, industrial and converting field.

Notes on Forestry

Nine forest fire fighting training schools for the native residents of northern communities of Saskatchewan will be held this summer. Natural Resources Minister, Hon. A. G. Kuziak announced that this type of training of native fire fighters started three years ago to build up manpower pools where they are needed most.

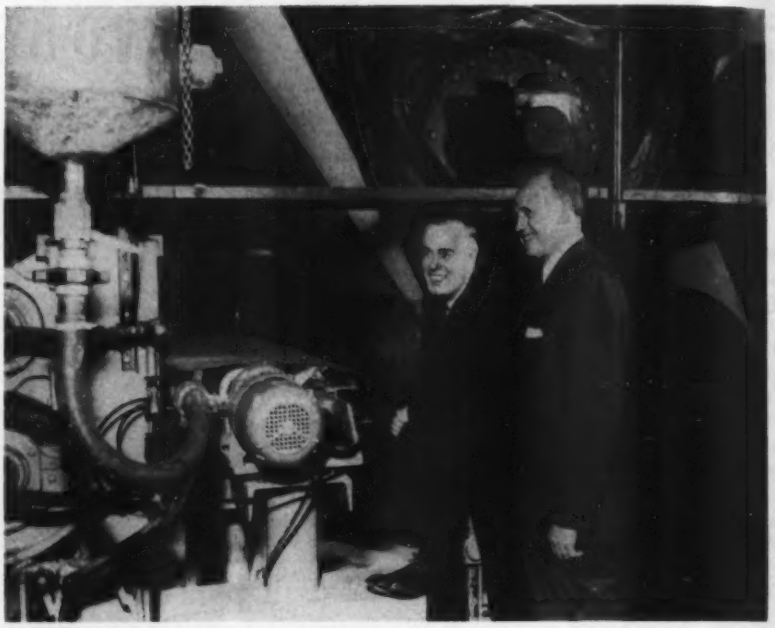
Production of pine seedlings at the State Forestry Commission nurseries has caught up with demand. Director Guyton DeLoach said the nurseries produced 307 million seedlings last year. This number will be reduced to about 250 million this year.

Eight pilot forests were launched in the state of Mississippi during the second annual southwide pulp and paper day. These forests will be a part of the 91 such demonstration forest tracts set up by members of the Southern Pulpwood Conservation Association in 12 southern states.

The spruce budworms that have been attacking the forests of New Brunswick and Quebec has finally halted due to the spraying program that began in 1952. Dr. F. E. Webb of the Forest Biology Laboratory, Fredericton, N. B., said that an area of 9.3 million acres was treated. He has recommended spraying every other year to keep susceptible forests alive indefinitely.

A new $600,000 laboratory has been dedicated at Yale University's School of Forestry. Named the William B. Greeley Memorial laboratory, the building will be used for graduate instruction and research in forest biology and wood technology.

Recent Expansions in the Industry



ROBERT GAVIN, manufacturing manager, and Al Brunner, vice president in charge of board sales, observe the coating operation on the newly installed Black-Clawson Magnetic Metering Bar Coater at B. F. Nelson Mfg. Co.

Magnetic Bar Coater Installed

B. F. Nelson Mfg. Co., manufacturers and converters of folding boxboard at Minneapolis, Minn., has recently installed a Black-Clawson smoothing press and magnetic metering bar coater on the company's No. 1 paper machine.

The coater is located in the paper machine section following the smooth press and applies approximately 2 lbs. per 1000 sq. ft. with 45 per cent solids.

The use of the magnetic metering bar holder provides a level and uniform surface on which the small bar rotates and provides for easy removal of the rod. Commercial rods without special adapters or machining are utilized and can be changed rapidly.

The coater itself is of portable construction and can be moved out into the pending aisle for service and clean-up.

KVP to Install New Machine

Plans for the installation of a new paper machine in its mill at Espanola, Ont., were announced by KVP Co. Ltd., a wholly-owned subsidiary of KVP Co. of Kalamazoo.

The new unit will be capable of producing both machine-glazed and machine-finished papers and will have an annual capacity of 15,000 tons of bleached kraft specialty papers.

The machine is expected to come into production in 1960 and the major contract has been awarded to Black-Clawson (Canada) Ltd.

Johns-Manville Completes Insulating Board Plant

Another step in Johns-Manville's expansion program has been made by the completion of the company's new insulating board plant at Klamath Falls, Ore. This plant is a part of the $30 million West Coast expansion program.

The new plant is designed to produce decorative panels and plank for ceilings and walls; acoustical ceiling panels; and to round out the complete line there is insulating board sheathing; building board and roof insulation including a new roof deck product which provides roof planking, roof insulation and inside finishing in one operation.

"Dixie Queen" Begins Operation

The new No. 4 paper machine, "The Dixie Queen", began operating on June 4 at Halifax Paper Co.

Photo of Tower of Parliament and Big Ben Clock by Ewing Galloway

HAM FELTZ says:

"Reminds me of HAMILTON Felts ...they run a long time, too!"

"Since 1858—the year before "Big Ben"—the famous clock was installed in London's House of Parliament —papermakers have found that Hamilton Felts give longest high quality performance between changeovers.

They help you reduce the high cost of downtime by keeping your machines running at top speed —longer . . . turning out tonnage with less broke and imperfections.

When it's time for a new felt on one of your machines, why not start using us as one source of your felt supply? Write, wire or telephone—today!

YOU CAN'T BEAT

Hamilton

FELTS

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For
Reburning
Lime
Sludge

We are specialists in the design and manufacture of rotary kilns, coolers and auxiliary equipment for burning lime, lime sludge and for many other purposes.

Over 1,250 Smidth rotary kilns have been furnished all over the world.

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42 Queen's Road
Bombay, India

of Roanoke Rapids, N. C. (a division of Albemarle Paper Mfg. Co.).

A production of 60-lb kraft at 800 ft. continued throughout the day, with only a moderate number of breaks and periods of shut down.

The construction of the new 246-in. machine by the Beloit Iron Works of Beloit, Wis., was first announced last July. The 10-month construction project, directed by Rust Engineering Co. of Pittsburgh, Pa., is said to be one of the shortest on record for the installation of a machine of this type.

The machine, which will normally produce approximately 350 tons of kraft daily, operates alongside "The Southern Star" — a sister 246-in. Beloit machine (also installed by Rust) which began operation in January of 1953.

Plastic Papers Establishes New Headquarters

Plastic Papers Inc. has announced that its sales, purchasing and administrative headquarters are now established at Hicksville, L. I., N.Y.— the new 27,000 sq. ft. plant.

Officers of the firm now at the plant include: Stanley Warshaw, president; Jerry Warshaw, executive vice president; Ken J. Rawson, general sales manager; and William Mullen, director of production and research.

Giant Coating Machine Installed

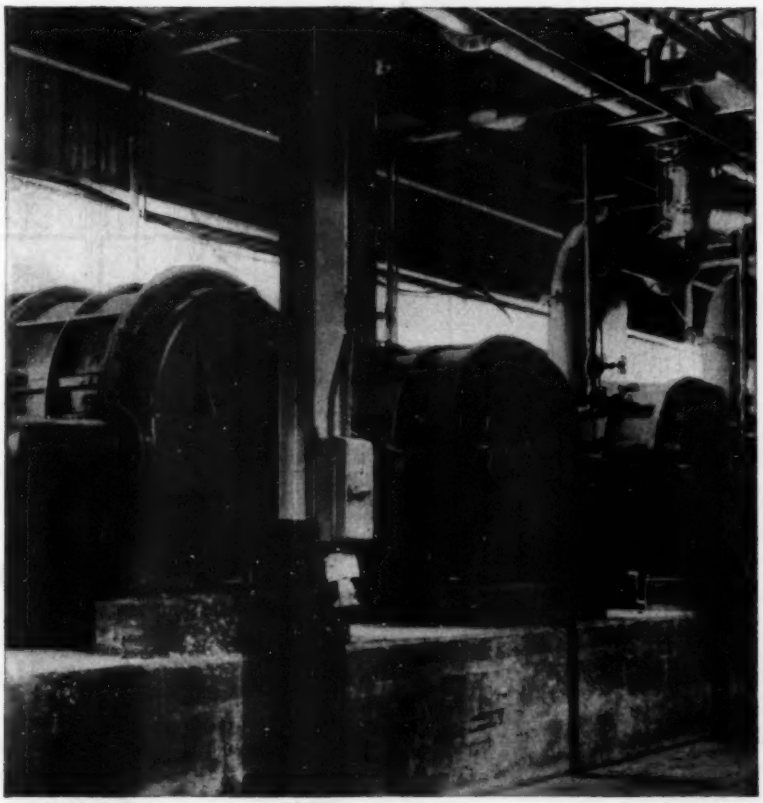
What is said to be one of the largest pressure-sensitive coating machines ever built has been designed, erected and installed by New Rochelle Coating Corp. located in Rochelle, N. Y.

The unit, capable of handling a web of material over 5 ft. wide, is 80 ft. in length. In a single continuous operation, the new machine applies an adhesive coating, then dries, laminates, slits and winds the web. Among some of the materials the machine can process in volume quantities are: vinyl, acetate, oilcloth, oilsilk, Mylar, polyurethane foam and film, metal foil and paper.

Georgia-Pacific to Double Production

The paper and containerboard operations of the Georgia Pacific Paper Co. are expected to be doubled when a substantial expansion pro-

What, actually, do Vacuum Pumps on paper machines handle?



Paper mill engineers know that it is actually a mixture of air and water vapor, but the custom of rating vacuum pumps in terms of air capacity alone causes this important fact to be frequently overlooked.

The presence of this water vapor causes a considerable reduction of the effective air handling capacity of any vacuum pump except the Nash. In the Nash Vacuum Pump the bulk of this water vapor is effectively condensed, due to the Nash operating principle. The air handling capacity of the Nash is therefore not reduced.

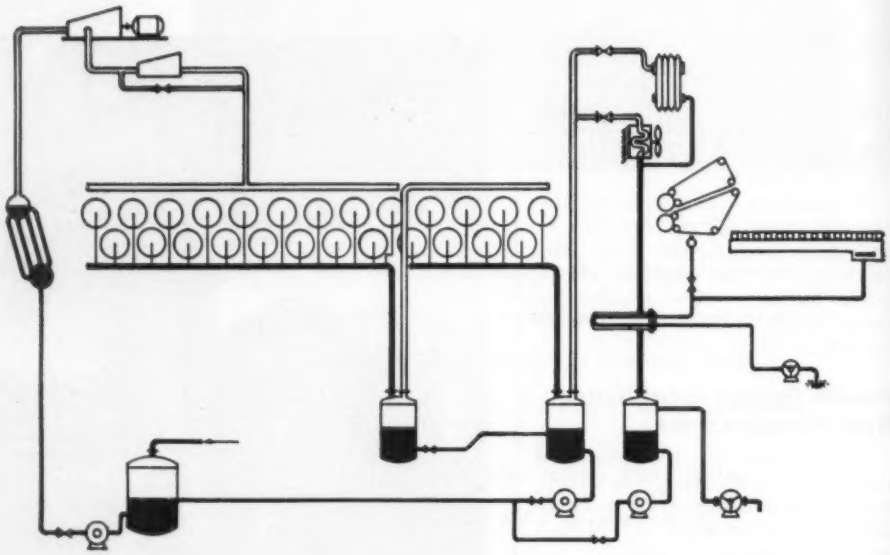
That is one of the reasons why Nash Vacuum Pumps are standard in over a thousand leading Paper Mills.

NASH ENGINEERING COMPANY

443 WILSON ROAD, SO. NORWALK, CONN.

RMF

DRYER DRAINAGE SYSTEMS



can pay for themselves from one to three years after installation

Experience has shown that RMF Systems can improve the operation of paper machines enough to pay their own way in a short time. This is true, whether they are to be installed along with new high speed equipment or to help modernize old machines. It is possible, because RMF Dryer Drainage Systems offer several advantages to help increase production. These include:

- Graduated dryer temperatures automatically assured
- Effective drying at lower temperatures
- Substantially increased drying capacity
- Less shrinkage, cockling, curling, wet streaks or hardening and far less broke

There are presently about 1000 RMF Dryer Drainage equipped machines in use today. They are operating testimonials to the efficiency of RMF Systems.

For more complete information on RMF Dryer Drainage Systems and other RMF products specifically designed for the paper industry write to:

ROSS MIDWEST FULTON · Dayton, Ohio

Subsidiary of Midland-Ross Corporation

gram (now being planned) is finished.

The current program involves two steps. The first will be to double the present capacity at Toledo, Ore., by the addition of another paper machine in which construction will be started soon. This is reported to bring the total production of the Toledo mill to over 600 tons per day. In addition, the company plans to construct a new pulp and paper mill at Samoa, Calif., to utilize the waste fibre from the corporation's forest products operations in the Eureka-Samoa area. Georgia-Pacific owns over four billion feet of timber in Northern California adjacent to this location.

Georgia-Pacific Paper Co. is a wholly-owned subsidiary of Georgia-Pacific Corp.

CZ Opens New Plant

Crown Zellerbach's Western-Waxide Division has opened its new polyethylene film extrusion plant in Orange, Texas. Ultimate annual capacity of this plant is said to be over 16 million pounds of free film.

The new 80- x 200-ft. plant is designed to house four extruders, auxiliary slitters and rewinders, a warehouse, offices and shipping dock facilities.

Peter J. Metz, formerly plant superintendent at the Los Angeles plant, has been named resident manager for the Orange plant. George A. Charters will be plant superintendent and Edward Sommers, Officer manager.

The Orange plant is one of the six operated by Crown Zellerbach's Western-Waxide Division. Other converting plants are located in North Portland, San Leandro, Los Angeles, Kansas City and St. Louis.

New Research Center

The American-Marietta Co. held an open house on June 19 to dedicate its new research center located on Harbor Island, Seattle.

The center consists of 21 unit laboratories and six process-development areas. It also includes areas and equipment for the testing and evaluation of forest products.

Programs will be conducted in basic and applied research, product development, process and equipment development, and analytical research. Research will be directed into fields of plywood, composition boards, wet strength and special papers, corrugated containers, pulp moldings, mineral wool, foundry cores and shell molds.

Allied News Notes

Lestoil Celebrates 25th Anniversary

An open house celebration honoring Lestoil Inc.'s 25th Anniversary and also the completion of 150,000 sq. ft. of office and plant space took place on May 18 at its plant in Holyoke, Mass.

The guests were given guided tours through the new plant and office area. The plant accommodates six production lines; two railroad spurs that handle an average of 40 cars of empty glass bottles; new 12 bays truck loading dock to accommodate an average of 35 trucks per 8-hr. day; and thirty-three 20,000 gal. and one 10,000 gal. storage tank in the new tank room.

Lestoil's production capacity is 100 million bottles per year (based on an 8-hr. day).

Lestoil, the first synthetic all-purpose liquid detergent ever marketed, was the first product to remove, simultaneously, water-soluble and non-water-soluble soils from fabrics and other materials or surfaces. Soil contains greases and oils soluble

Just Like Panning for Gold!
You'll get exceptionally low "first cost"
You'll use minimum power
You'll need less maintenance
with the
Kalamazoo "Side Hill" Washer
These practical slide washers give a better and more effective wash job than other washing methods. They may also be used as thickeners and savealls. These units are designed by Kalamazoo engineers — experts in serving the paper industry for more than 90 years. Our experience enables us to completely prefabricate the units of top quality materials. Installation supervision can be furnished.
Laboratory size units are available for experimental purposes in determining the proper angle and screen mesh.
Write today for information on capacities and cost estimates.
WOOD TANK DIVISION
Kalamazoo TANK & SILO CO.
759 HARRISON ST.
KALAMAZOO, MICH.

News of the Industry . . .

only in a dry cleaning solvent and sugars and starches soluble in water. Lestoil makes possible, the simultaneous and thorough removal of both in water.

A. E. Staley Mfg. Co. is entering into the synthetic polymer field. This move is part of the company's stepped-up research and diversification program launched three years ago. A polymer pilot plant put in operation at Decatur early this year is now in semi-works production of acrylic-type emulsions. Staley has also announced plans to acquire the U. B. S. Chemical Corp. of Cambridge, Mass.

Doven Div. of Appleton Machine Co. has established a research laboratory in slitting and winding problems of paper, textiles, leathers, synthetic fabrics, plastics and other materials. Services of the laboratory are available without charge to any firm sending a sample of its "problem" material and specifications for winding and slitting.

Coming Events

TAPPI

July 20-31—Eighth Pulp and Paper Statistics Course, Dartmouth College, N. H.
August 17-21—Tenth Testing Conference, Multnomah Hotel, Portland, Ore.
September 9-11—Fundamental Research-Wet Strength Conference, I.P.C., Appleton.
September 15-17—Ninth Corrugated Containers Conference, Jung Hotel, New Orleans.
September 21-23—Fourteenth Paper Plastics Conference, Edgewater Beach Hotel, Chicago.
October 7-9—Fourth Deinking Conference, Roger Smith Hotel, Holyoke, Mass.
October 12-15—Fourteenth Engineering Conference, Penn-Sheraton Hotel, Pittsburgh.
November 4-7—Thirteenth Alkaline Pulping Conference, Robert Meyer Hotel, Jacksonville, Fla.

SUPERINTENDENTS ASSOCIATION

September 1-3—New York-Canadian Div., Chanteclerc Hotel, Ste. Adele, Que.
September 9-11—Northwestern Div., Hotel Leamington, Minneapolis, Minn.
September 17-19—Northeastern Div., Poland Spring House, Poland Spring, Me.
September 30-October 1 — Pennsylvania-New Jersey-Delaware Division, Pocono Manor Hotel, Pocono Manor, Penn.
October 2-3—Connecticut Valley Div. (joint meeting with New England section of Tappi), Great Barrington, Mass.
October 11-15—Southern and Southeastern Division, Williamsburg, Va.

OTHER MEETINGS

June 24-26—Huyck Felt Co.'s Felt Workshops, Rensselaer, N. Y.
June 28-July 3—Thirteenth National Meeting of the Forest Products Research Society, San Francisco.
August 29-September 10—Fifth World Forestry Congress, University of Washington, Seattle, Wash.
August 31-September 4 — Thirty-fourth Norelco X-ray school, Sir Francis Drake Hotel, San Francisco.
September 4-5—Graphic Arts Association Executives, Hotel Plaza, New York City.
September 6-12 — Seventh Educational Graphic Arts Exposition, New York Coliseum.
September 10-12—Wood Industries Conference, Portland, Ore.
September 14-16—National Paper Trade Association convention, Conrad Hilton, Chicago.
September 16-18—Huyck Felt Co.'s Felt Workshops, Rensselaer, N. Y.
September 20-25—Annual Conference and Exhibit of the Instrument Society of America, Chicago amphitheater, Chicago.

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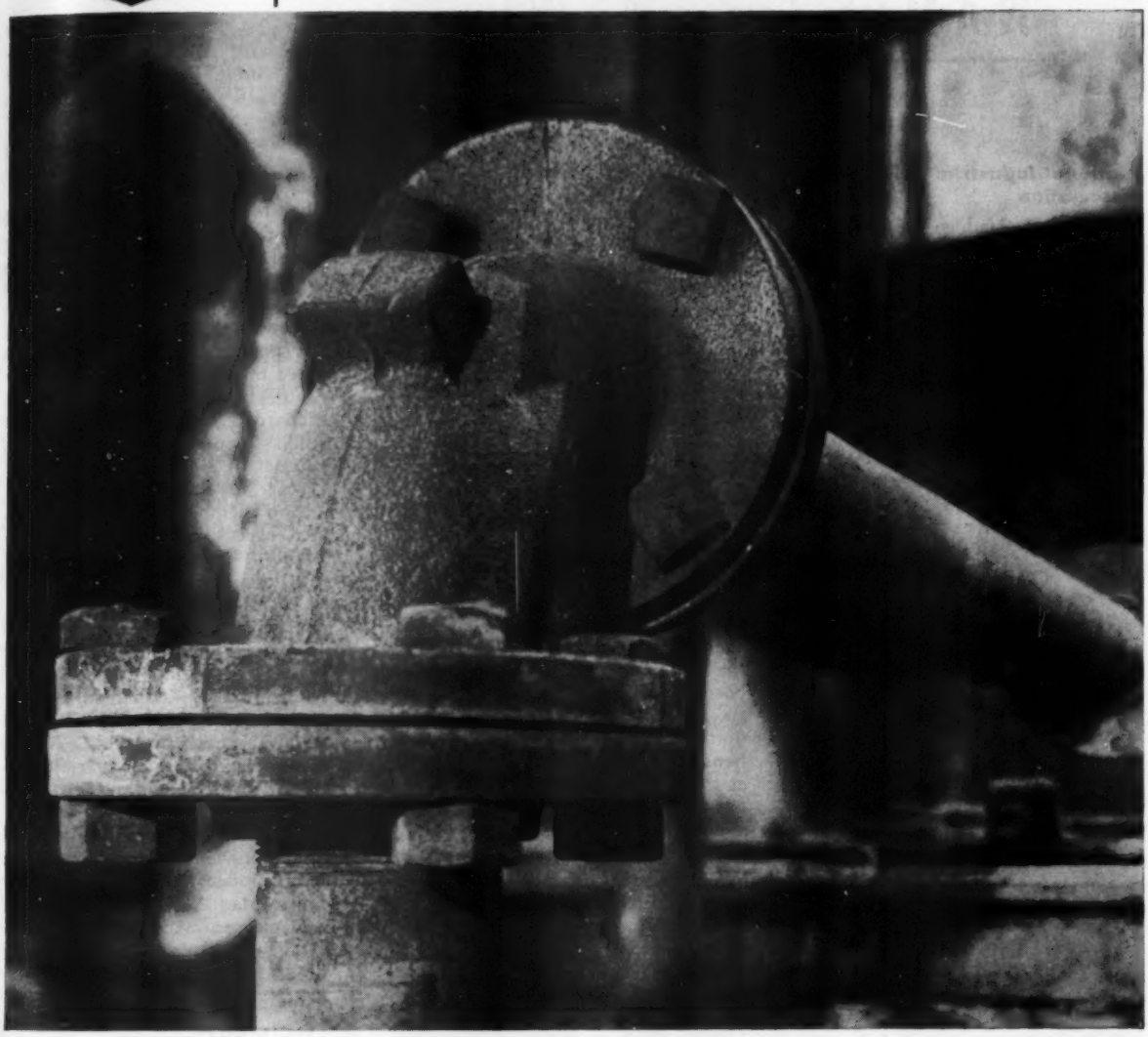
DOW | **SARAN LINED PIPE**



Saran Lined Pipe carries 140°F. Sulphuric Acid . . . resists shock, temperature changes, corrosion

When a leading paper manufacturer needed a dependable pipeline to carry hot, strong acid waste from its chlorine dioxide bleach plant to a distant kraft recovery system . . . when the pipe had to withstand severe thermal shock, and require a minimum of support and maintenance . . . Saran Lined Pipe was specified as the best answer on all counts.

The Nekoosa, Wisconsin, plant of Nekoosa-Edwards Paper Company installed the chlorine dioxide bleach plant two years ago. Acid waste from the reactor consists of sodium bisulfate dissolved in 35% concentration sulphuric acid. This highly reactive solution enters the Saran Lined Pipe system at 140° F., to be carried to the kraft pulp mill recovery system where both sulphur and sodium are ultimately recovered. The pipeline traverses work areas and pipe tunnels, often being inaccessible for repair and maintenance, and in places is exposed to outside temperatures which can range well below zero in winter.

Because of its extreme corrosion resistance and high physical strength . . . despite conditions of high chemical reactivity, and of thermal and physical shock . . . Saran Lined Pipe continues to perform well for Nekoosa-Edwards, providing completely dependable, maintenance-free performance.

Saran Lined Pipe, fittings, valves and pumps are available for systems operating from vacuum to 300 psi, from below zero to 200° F. They can easily be cut, fitted and modified in the field without special equipment. For more information, write Saran Lined Pipe Company, 2415 Burdette Avenue, Ferndale, Michigan, Dept. 2287DN7.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

NAMES *in the* NEWS

National Industrial Advertisers Association

Stephen J. Madden, of Babcock & Wilcox Co., has been elected president of the New York chapter of the National Industrial Advertisers Association.

Prior to his election as president, he has held the positions of secretary and first vice president. Beginning July 1, he assumed new office and will serve during the 1959-60 Association year.

S. J. Maddon

T. W. Earle

R. D. Schribner

R. S. Long

Continental Can Co.

T. W. Earle, general manager of the Woodlands Div. of Continental Can, has been elected a vice president of the company.

Russell D. Schribner has been appointed general manager Central region, for the Boxboard & Folding Carton Div. of Continental. George Oechsle will assume Schribner's previous position as plant manager of the Division's Elkhart, Ind., facility.

Beaven W. Mills will replace O. R. Gibbons as Eastern regional sales manager for folding cartons in the Boxboard & Folding Carton Div.

Louis F. Kalmar and Arthur J. Powers will now assume new duties in Continental's newly-formed Woodlands Div. Kalmar will be assistant to the general manager and Powers will be control officer and chief accountant for the division.

The newly-created position of new products manager for the Glass & Plastics Group of Continental has been given to Robert S. Long.

John E. Burdsall has been promoted from general superintendent to vice president in charge of manufacturing. H. H. Harrison who has served for many years in this capacity will continue as a vice president and will act as a consultant to management.

Lowell W. Newman has been promoted from superintendent of power to plant engineer.

West Virginia Pulp & Paper Co.

Paul Lyon has been named manager of marketing research. With the company since 1955, Lyon has been coordinator of financial analysis. He will be responsible for developing and implementing a comprehensive marketing research program at the corporate level and will work closely with marketing research personnel of the company's operating divisions.

Westvaco Multiwall Division has increased its staff with the appointment of Warren A. Finberg as sales representative. He will work out the Division's Chicago office and cover the Chicago area as well as northern Illinois. He will be the third member of the Chicago sales staff headed by John O. Frahm, district sales manager.

Lawrence M. Donovan has been appointed sales representative for the Georgia area. Donovan's appointment brings the fourth member of the Atlanta sales district under district sales manager Henry M. Howe.

Eugene Revelle will act as a sales consultant, working out of the Torrance, Calif., sales district. He will be headquartered in Denver.

William M. Ritchie, of the Denver sales office, has been promoted to the position of technical service representative at Torrance.

William H. Liebetrau, formerly sales representative in the Kentucky and Tennessee areas, has been named to replace Ritchie.

International Paper Co.

The following changes in the duties of senior officers has been announced by International Paper Co.

John H. Hinman will continue to serve as chairman of the board. He will continue active in matters of major policy, but has asked to be relieved of his duties as chief executive officer.

Richard C. Doane continues in his position as president and assumes the duties of chief executive officer.

Lamar M. Fearing, a vice president and member of the board, was named executive vice president.

John T. Peninger has been appointed assistant treasurer. He has been with International for 27 years.

A reorganization of the manufacturing department of the Bagpak Div. has been announced.

A. S. Morgan was named division production manager; A. R. Davis, division engineer; and H. C. Roper, division director of industrial relations. All three will have their headquarters in Camden, Ark.

Production managers appointed for the four operations were E. R. Fogle, Camden, Ark.; J. A. Horne, Mobile, Ala.; W. M. Cathey, San Jose, Calif.; and A. C. Kuehn, Litchfield, Ill.

Necrology . . .

Andrew G. Spiegelhalter

Andrew G. Spiegelhalter, president of Pusey & Jones Corp. (Wilmington, Del.) from 1939 until his retirement in 1953, died at his home last May. Starting out in 1900 as apprentice machinist for the company, he rose through the ranks to become manager of the shipbuilding machinery department in 1920, and general manager later on.

Ellis Olsson

Ellis Olsson, a pioneer in the Kraft process of papermaking, died last May at his plantation estate near West Point, Va. A native of Sweden, where he studied chemical engineering, he came to the United States in 1906 to study pulp bleaching. Olsson retired

in 1945 as president of Chespeake Corp. of Virginia, and was subsequently named its chairman.

E. A. Forbes

E. A. Forbes, vice president of Rhinelander Paper Co. before retiring three years ago, died in Rhinelander, Wis. last June. He built the first power plant in Rhinelander in 1889 at the age of 22.

Arnold G. Bennett

Arnold Gibson Bennett, vice president and general manager of Paper Container Div., Continental Can Co. of Canada Ltd., died last May at his home in Clarkson Ont.

Allied Personalities

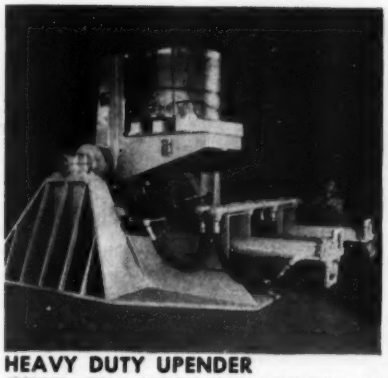
The appointment of **William E. Hemphill** as sales representative has been announced by Lunkenheimer Co. of Cincinnati. Hemphill will operate out of the company's Chicago office covering the Northern Illinois market.

George H. Burns has been appointed as district manager, Philadelphia and Pennsylvania, for Clinton Corn Processing Co. of Clinton, Iowa. Burns will be assisted by **Bradford Low** and **Ernest Wigfield.** The transfer of **John Weir** from New York to Baltimore for coverate of the Maryland and central Pennsylvania areas has also been announced.

Roger H. Stickle has been elected vice president and assistant manager of Stickle Steam Specialties Co. of Indianapolis. Stickle has been with the company since 1937 as machinist, shop foreman, superintendent and field service engineer.

Romeo G. Cormier, superintendent, Gardiner Paper Mills at Gardiner, Maine, recently earned the distinction of being the first and only papermaker to earn the "degree" of Master of Felt Technology by taking Huyck Felt Co.'s Felt Workshop course in applied felt technology for the second time. This workshop is an intensified three-day course designed to familiarize papermakers with all important phases of felt application.

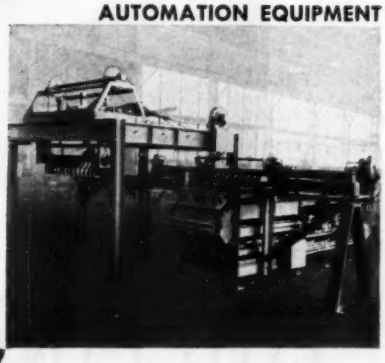
Titanium Pigment Corp., a subsidiary of National Lead Co., has transferred to sales representatives. **William H. Abels,** a salesman in the New England sales district, has been transferred to the North Central sales district, with headquarters at Pittsburgh. **John P. Burke** will move to the New England sales district as a salesman. His headquarters will be at Boston.



HEAVY DUTY UPENDER

LOG & CHIP HANDLING SYSTEM

AUTOMATION EQUIPMENT



PV

FINDS THE ANSWERS

"PV" stands for *Planet Versatility* . . . a quality that has made Planet Corporation known throughout industry as an organization that has solutions to the most perplexing production, materials handling, or automation problems.

Planet Corporation engineers apply uninhibited thinking to problems to find workable solutions that increase efficiency. No job is too big or too difficult . . . Planet's "PV" engineers have automated production lines, built bulk and unit materials handling systems, designed complete foundries, developed the world's only true universal transfer device . . . they are experts, in fact, on all types of special handling and automation machinery, and materials handling equipment.

Let Planet demonstrate how its versatile engineering skill, and production and erection know-how can help you. Discuss your problem with a Planet "PV" engineer . . . *it pays to Plan with Planet.*

1826 SUNSET AVENUE • LANSING, MICHIGAN

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BONNETLESS
KNIFE GATE VALVE
YOU CAN BUY!

They're available in a complete range of metals. For more information, write for Bulletin 300.

DeZURIK CORPORATION
SARTELL, MINNESOTA

FOREIGN ABSTRACTS

Cold soda process, as applied to eucalypts

Two papers deal with the cold-soda process, as applied to various species of eucalypts for the preparation of pulps to be used in newsprint manufacture. Both laboratory and mill experiments are described.

Pulp that was nearly free of iron was prepared in a laboratory Bauer refiner, and determinations were made both of its strength and brightness after it had reached a Canadian standard freeness of between 100 to 200. The best chip size required for rapid penetration of the alkaline liquor, and also for high pulp strength was 0.5 in. Green or air-dried wood gave pulps that had about the same strength properties. Various soaking temperatures were used and these ranged from 10 to 60° C.

At higher temperatures, stronger pulps were obtained but these lost in brightness. The spent liquors from the eucalypts were much darker than those from similarly treated aspen. This is accounted for by the presence of polyphenols. If the pulping liquor was recycled and chips were kept several hours after the initial soaking, the resulting pulp brightness suffered, although the treatment had little effect on pulp strength.

When at some intermediate point in the refining process the pulp was washed, this could be done at a higher freeness; the concomitant drop in pH did not affect the pulp strength at the same final freeness. Opacity of cold soda pulp was lower than that of eucalypt groundwood. The brightness of mixtures of about 20 per cent cold soda pulp and 80 per cent groundwood showed little difference from that of groundwood alone. It was advantageous to prepare mixtures of 20 per cent cold soda, 60 per cent eucalypts groundwood and 20 per cent *Pinus radiata* kraft pulps. Such a combination had a higher tensile and tearing strength and lower bulk and period of drainage than had mixtures of eucalypts groundwood and pine kraft to which no cold soda pulp had been added.

Various bleaching agents were used in increasing the brightness of cold soda pulps; these included peroxides, hypochlorites and hydrosulfites. Besides *Eucalptus regnans, E. obliqua, E. gigantea* (on which most of the experiments were carried out), *E. viminalis, E. globulus,* myrtle beechwood (*Nothofagus cunninghamii*) and S. sassafras (*Antherosperma moschatu*) were also pulped by the cold soda process. The properties of these various pulps are tabulated.

Twenty references are given. J. L. Sommerville and A. J. Pearson. *APPITA* 12,57-72 (1958).

The second paper deals with the actual mill production of cold soda pulps from eucalypts. The first cold soda pulp was produced in July in Tasmania, and soon became a regular part of the newsprint furnish at a Boyer mill. Daily production has been 30 tons, and the mixed stock is handled by two newsprint machines.

The authors give the conditions used in producing the cold soda pulp, and the principle, operation and control of the mechanical units used. Typical strength properties are given, as well as the power consumption required in refining pulps from the various wood species. The overall operation appears to be very satisfactory.

E. J. Bugg and A. J. Pearson. *APPITA* 12,73-85 (1958) (Australia); discussion pp. 86-7.

Identification of high polymers in paper

This is a contribution to the identification of specific high polymers by means of infra-red spectrography.

The synthetic resins must first be extracted from the paper with suitable solvents prior to their identification. Hot water removes polyvinyl alcohols. Boiling xylene removes polyethylenes. Benzene dissolves polystyrene and certain silicones. Polyisobutylene and polyvinylbutyraldehydes are removed by carbon bisulfide. Butadiene-styrene polymers and silicones are dissolved by carbon tetrachloride. A 1:1 mixture of carbon bisulfide and acetone removes polyvinyl chlorides and copolymers of butadiene and styrene.

According to infra-red absorption spectra, the synthetic resins that are often used in papermaking fall into three rather broad

classes. For example, one class shows the typical hydroxylabsorption band and includes polyvinyl alcohols, as well as polyvinylbutyral and (surprisingly) butadiene-styrene polymers which should not have shown the OH absorption, invariably did in the present study. A second class includes the urea-formaldehyde and melamine-formaldehyde resins, and the polyamides, whose absorption is characterized by the band showing the secondary-amine (NH) grouping. Here the OH band is absent. A third class shows neither the hydroxyl nor the amine bands. It is divided by the authors into two sub-groups, one of which shows a carbonyl band, whereas the other does not.

In the first sub-group are the acrylic resins, polyvinyl acetate and co-polymers of vinyl acetate and vinyl chloride. The second sub-group includes the silicones and the polyethylenes. There is another class in which the carbonyl absorption appears to be due to plasticizers. In the identification of the extracted polymers, the initial spectra should serve to place them in on of the above groups. Then they can be identified individually by comparing their spectra with those of known compounds.

Eighteen absorption spectra are given. A. Robert and O. Martin-Borret. *Bull. Assoc. tech. de l'ind. Papetiere* (1958) 195-203 (in French).

Mechanism of alkali pulping

The effects of sodium hydrogen sulfide on the delignification of eucalypt wood were studied. The wood was reduced to shavings, and were then treated with sodium hydrogen sulfide at pH 7.8, 9.0, 10.1 and 11.2 by the use of appropriate buffers.

Experiments were also carried out by heating the wood with the buffer solutions alone, so as to determine what effects were due primarily to the buffer action on wood. Apparently, the sodium hydrogen sulfide converted the lignin into a derivative which was more soluble in the caustic soda then was the original lignin. The pH of the cooking liquor controlled the amount of lignin removed during the digestion, even when a suitable correction had been made for the delignification caused by the buffer alone.

At pH 7.8, it appeared that the delignification followed a different course from that at higher pH's and this effect was due to the sodium hydrogen sulfide and not to the buffer action. Here however, the sulfur content of the residual lignin in the pulp and the effects of the NaHS concentration on the reaction resembled analogous effects at pH 9.0 Both the sulfur content and concentration effects were smaller at pH 10.1.

It was shown that the buffers used, dissolved both lignin and pentosans from the wood, and that these amounts increased with rising pH. The composition of the buffers themselves had certain effects apart from pH; for example, a borate buffer (H_3BO_3-KCl-NaOH) at 8.6, dissolved more lignin than did a carbonate buffer ($NaHCO_3Na_2CO_3$) at about 9.0. Besides the pentosans removed by the various buffers, the NaHS also removed pentosans, and at pH above 9.0, this removal amounted to about 50 per cent of these dissolved components.

The amounts of cellulose lost in these digestions appeared unaffected by the NaHS, but normally proceeded more rapidly at the higher pH's. When the wood shavings were treated with NaHS before cooking with caustic soda, there were higher pulp yields and lowered losses in cellulose and pentosans for a specific lignin content than without this pre-treatment. J. F. Kottek-Hobden, *APPITA* 12,88-100 (1958) (Australia).

Purification of effluents of a board mill

A board mill in Kayersberg, which produced mechanical pulp and chemigroundwood, discharged its effluents into a neighboring stream after partial purification by a process of rapid sedimentation. However, it was found that this did not meet the purifying capacity of the stream and actually caused sufficient pollution to evoke court action. Hence in 1955, the mill was ordered to purify its effluents so as to meet legal standards.

This led to extensive laboratory and pilot plant researches which are described by the head of the research laboratory of the Cartonnerie de Kayersberg, and which in 1957 installed an improved treatment in its pulp mill.

This meant the installation of the Degremont system. This consists of a tank for flocculation in which the pH is monitored strictly (to ± 0.05) by means of an automatic recording pH meter. Flocculation results from continuous agitation of the affluent with aluminum sulfate solution (approximately 20 per cent)

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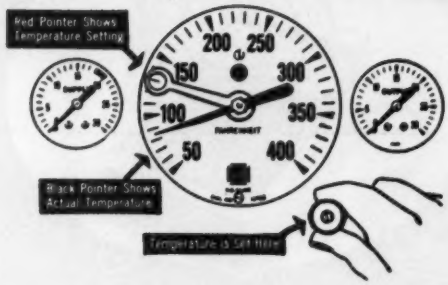

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and the product then enters a large horizontally-placed sedimentation tank from which the fibers, mixed with impurities, are removed periodically. Thereupon the water enters the stream.

This method of purification has met the legal requirements and has led to marked improvement in the biological conditions of the stream below the mill.

However certain mill problems remain unsolved. The financial outlay has been a serious one. The principal pollution difficulties were due to the chemigroundwood effluents, the production of which has been relatively slight. At present, the extension of chemigroundwood operations appears out of the picture. The separation of fibers and sedimented mud is also a major problem, and furthermore the board-machine operation has been slowed down by 5 to 10 per cent.

One figure is included. J. Marchand *Bull. Assoc. tech. de l'ind Papetiere* (1958) 189-94 (in French).

New instrument for making moisture determinations

The importance of moisture control in papers and the methods hitherto used are discussed critically. Older methods are either time consuming or inaccurate. More modern techniques, based on the measurement of electrical resistance or the dielectric constant of paper, are rapid and quite adaptable to continuous recording but are often affected by the composition of the sheet. All these drawbacks can be overcome if, in place of absolute moisture control, the water vapor-pressure of the sample is determined under conditions of constant air humidity.

The author believes that a practical knowledge of the state of conditioning, i.e. the relative humidity (R.H.) in equilibrium with the paper, is of greater importance than is the absolute moisture content of the sheet. A moisture meter was devised on this principle. It includes an open equilibrium chamber, placed over a metal plate which supports the sample, and an electronic hygrometer that measures the electrical resistance of thin layers of a hygroscopic salt or acid solutions within the R.H. range of 10 to 90 per cent (*e.g.* lithium chloride or bromide, zinc chloride or sulfuric acid may be used).

Non-absorbing filters prevent dust from entering these solutions and an automatic compensator for electric resistance changes, caused by temperature variations, are provided. Thus, a second hygrometer element and control salt solution are installed in a constant humidity chamber above the electric circuit. The claim is made that this new, simply constructed meter is easily operated, requires no calibration curves, covers a wide R.H. range and is practically independent of the temperature.

One table and 10 figures are given. H. Gaegauf. *Ind. carta* (Milan) 12, No. 8/9, 100-107 (1958), in Italian; through the *Abstract Bull., Inst. Paper Chem.* 29, 1013 (1959).

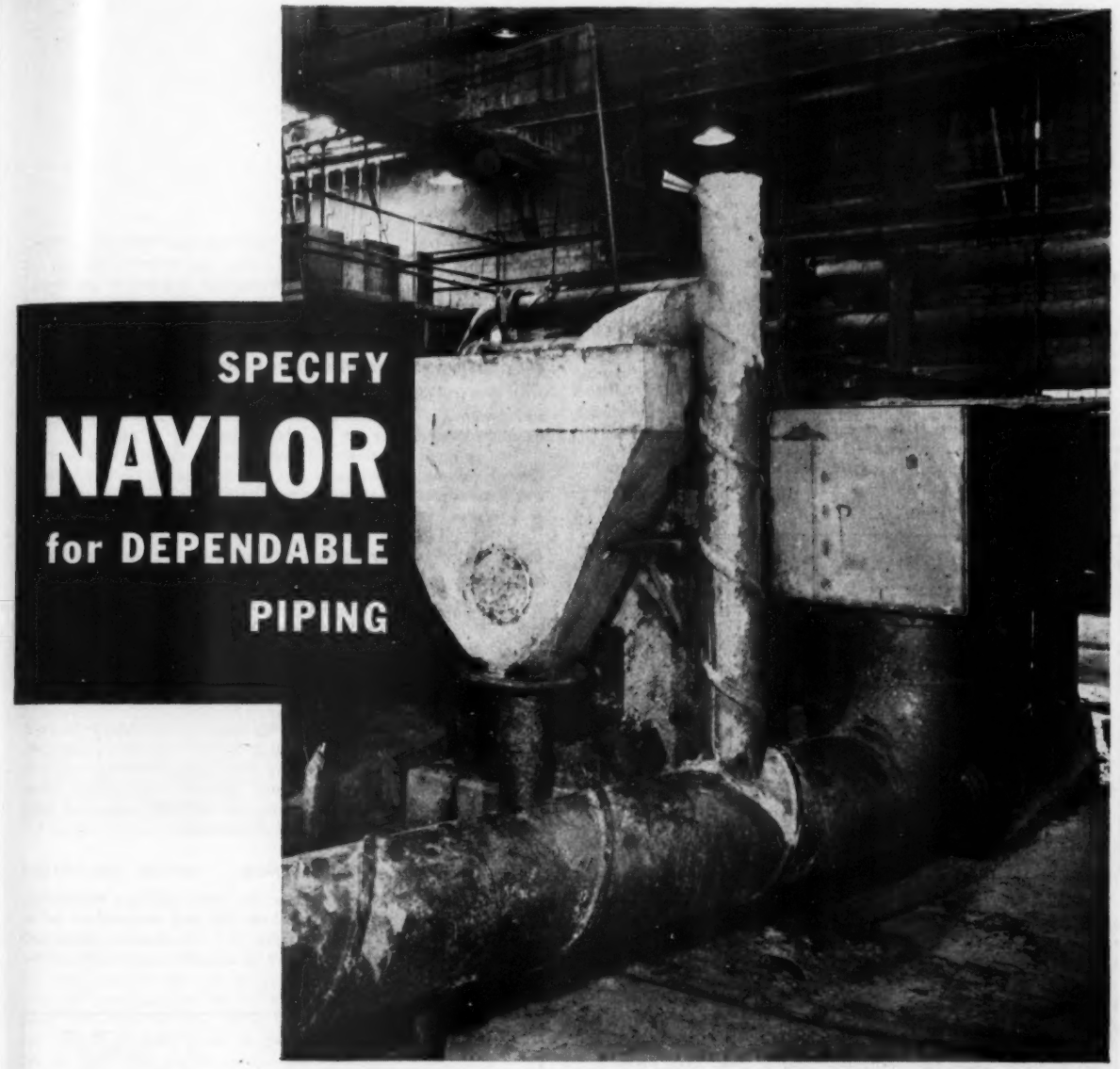
Resins in circulating and in waste water of the paper machine

The method of determining these resins depends on the interaction of metallic resinates with an excess of dilute sodium hydroxide. This solution is then filtered and the resins are precipitated by means of sulfuric acid and extracted with ether to free them from other precipitable impurities such as lignin, silica, humic acids, etc.

A flow chart together with adequate descriptions indicate how some of these non-resinous materials may also be determined proximately. In the experiments listed, a fully saponified rosin size was used, and the distribution of resins (i.e. the resin balance) was determined by use of the above analytical method in the water system of a commercial paper machine.

The sodium resinate could be converted into free rosin acids at pH 5 to 6, and could thus be retained in the save-all. Starting with a furnish containing 2.14 per cent rosin, based on the fiber content, the authors showed that 87 per cent of this was retained by the paper sheet. In the waste waters of the save-all, slightly less than 0.1 per cent resin acids was lost; 5.8 per cent was lost in the effluents from the presses, the suction roll and the knotter.

The techniques are fully described, five figures, six tables and 22 references are also included. Georg Jayme and Karl Reimann *Das Papier* 13, No. 9/10, 190 to 200 (1959) (in German with English and French summaries).



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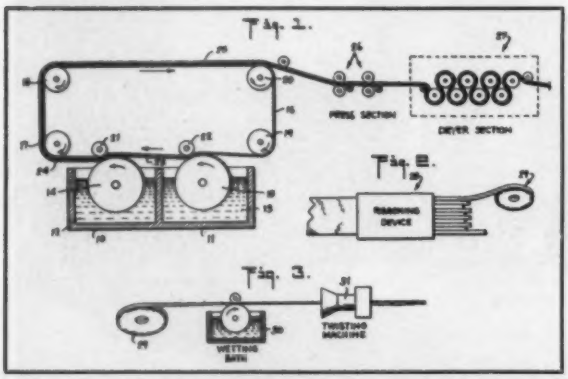
PATENT REVIEWS

MELVIN NORD

Twisted paper yarn

U. S. 2,871,652, issued February 3, 1959, to Harold A. Schwartz and assigned to Patchogue-Plymouth Corp., describes a method for manufacturing twisted paper yarn constituted by intimately bonded or laminated paper ribbons.

Fig. 1 shows a machine consisting of two vats 10 and 11, each containing a paper pulp slurry 12 and 13. The vat, which is to furnish the cover paper, will contain a suitable mixture of materials and coloring matter blended in the stock suspension so as to form a paper ply of good quality. The stock in the other vat, however, may be prepared from waste paper since the ply formed in this case will not be visible.



Cylinder molds 14 and 15 pick up thin layers of the paper pulp and apply it to felt 16. The felt 16 runs between the squeeze rollers 21 and 22 and the cylinders. Thus, a laminated two-ply paper is formed.

As the wet web passes over roller 20, it is separated from the felt 16, led to the press section 26, and from there to a dryer section 27.

As the sheet leaves the last dryer cylinder, it passes through a series of heavy metal rolls which calendar it under high pressure to improve the smoothness and finish of the sheet. Then, as shown in Fig. 2, the laminated paper sheet goes through slitters 28 which cut the sheet into ribbons and are then wound on rolls 29.

The roll 29 of laminated paper, as shown in Fig. 3, may be passed through a water bath 30 and then run directly into a twisting machine 31 to form a cord or yarn of paper with the quality paper on top and the cheap unbleached paper on the inside as a filler.

Manufacture of oil- and water-resistant papers

U. S. 2,868,685, issued January 13, 1958, to Martin L. Douris and Milton G. Schmitt and assigned to Thilmany Pulp & Paper Co., describes a process for the manufacture of oil-resistant and water-resistant papers, particularly laminated papers.

The object of the invention is to avoid bleeding difficulties, while maintaining porosity. It has been found that this can be accomplished by treating the fibers in such a way and with such a thermoplastic, that the contact angle of the thermoplastic with the paper made from the fibers does not change in a specified period of time.

Among the conditioning agents which may be used to treat the fibers in order to obtain this result are those which include chromium compounds containing chromium or other metals capable of forming complexes with a fluorinated organic material, so that in the final arrangement the resulting compound will be formed, attached to the fiber in such manner that the terminal groups are oriented away from the fiber and towards the wax or other laminant which may be subsequently applied to the fibers.

The patent refers to methods of producing such conditioning agents.

Measuring the equilibrium humidity of paper

U. S. 2,873,605, issued February 17, 1959, to Roger M. Warner, and assigned to Champion Paper & Fibre Co., describes an apparatus for measuring the equilibrium humidity of paper.

One or more flat sheets of paper are placed in a container of limited volume, containing a humidity-sensing element. The relative humidity of the air in the container is recorded and its value, as it reaches equilibrium, is determined.

Pulping of paper broke containing wet-strength resins

U. S. 2,872,313, issued February 3, 1959, to Donald H. House and Yun Jen, and assigned to American Cyanamid Co., describes a process for the pulping of broke carrying high-molecular weight resin as an agent imparting wet strength, so as to form a pulp which can be sheeted alone or mixed with fresh pulp to yield good quality paper.

It has now been found that the pulping of wet-strength broke is greatly facilitated by contacting the broke with a dilute solution of an oxidizing salt and maintaining the broke in contact with it until the fiber-resin-fiber bonds have loosened to the point where the broke can be pulped in conventional pulping equipment such as a beater, hydropulper, refiner or dynapulper.

Paper-machine press section

U. S. 2,869,437, issued January 20, 1959, to Lloyd Hornbostel, Edward D. Beachler and Donald A. Ely and assigned to Beloit Iron Works, discloses an apparatus for conveying a moist web of paper from the forming surface to a suction press without any open draws.

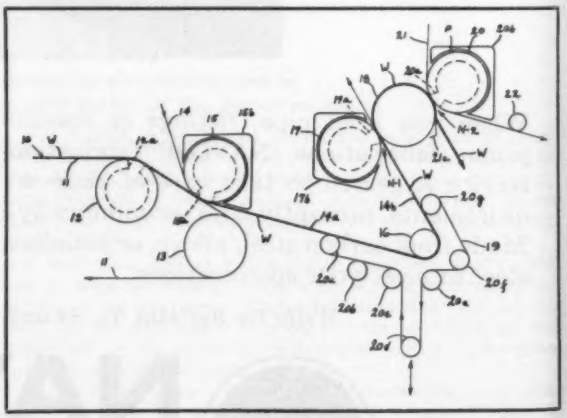


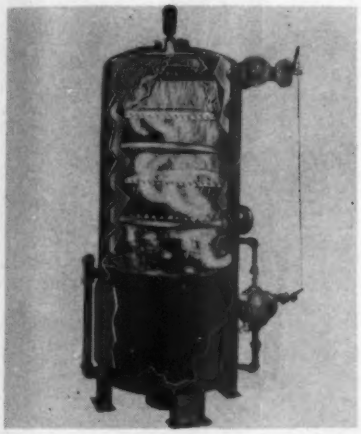
Fig. 4

As shown in Fig. 4, the present arrangement involves the suction pick-up roll 15 and looped felt 14, and it permits the use of the looped felt both as a pick-up felt and a press felt by positioning a suction press roll within the loop of this felt. The suction press roll defines a first press N-1 with a bare- or plain-surfaced roll 17 which in turn defines a second press nip

(Continued on page 290)

NEW PRODUCTS

These items are numbered for your convenience. Further information on the various products described may be requested at no obligation through our Readers' Service Dept. Use the business reply card in this issue.



Feedwater heater

A new deaerating, feedwater heater with an exclusive new internal-vent condenser has been introduced.

The condenser is in the form of a double-walled hood at the top of the heater. A series of opposing fins on the inside wall slows and condenses the rising steam. Air and non-condensable gases escape through the air vent valve to the atmosphere.

In operation, only enough steam escapes to ensure complete removal of the air. The flow of steam and water in opposite directions insures maximum feedwater temperature with minimum steam consumption. Other features include a stainless steel inner shell in the deaerating section where oxygen is released, and a choice of float controls to regulate the feedwater inlet.

The heaters are available with either a vertical or horizontal storage section, in a capacity range from 3000 to 300,000 lbs. per hr. *Stickle Steam Specialties Co.*

Circle No. 11 on Readers' Service Card

Paper knife

The all-new Si-Namic paper knife is now being marketed. The new knife, which should materially reduce down-time, features a completely new finish, new steel and new packaging.

The new finish is designed to generate the keenest cutting edge at the point where the knife face and the bevel meet, assuring maximum sharpness after successive grindings. It virtually eliminates drag, materially reduces dust and stays sharp up to 100 per cent longer.

The new steel is made from a new formula, developed and produced in the company's own steel mill. The mix contains more edge-holding alloy, is more wear-resistant, and combines with the new finish to provide a far sharper and longer-lasting cutting edge.

The new Si-Namic knife is furnished on a new design knife board with steel reinforced ends. This prevents end-splintering, avoids injury to fingers, and completely protects the ends and the edge of the knife. *Simonds Saw & Steel Co.*

Circle No. 12 on Readers' Service Card

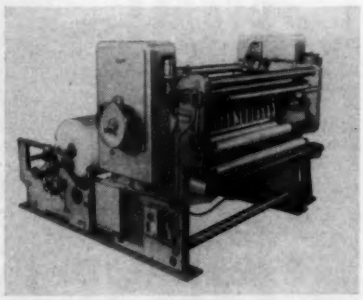
Suction unit

A new suction unit is being offered. Tradenamed Rotabelt, it is said to increase production, increase the life of wire and felt and reduce power consumption.

On one application, the suction unit displayed a flat box and on many occasions one or two baby presses. Used on a fourdrinier wire part, the unit dispensed with ordinary flat boxes, thus reducing wire friction and greatly increasing wire life. On many installations where the suction couch was not used, the top couch roll was removable.

The Rotabelt is ideal on wet felts eliminating blowing at the first press nip. It is also ideal for felt conditioning. *W. P. Evans & Son Ltd.*

Circle No. 13 on Readers' Service Card



Automatic roll winder

The availability of the new improved automatic roll winder has been announced. Known as No. 60-B, it continuously processes parent rolls at speeds in excess of 1200 fpm. on good quality, facial-type toilet tissue and delivers rolls with new positive, clean-cut perforations.

The automatic winder handles web widths of up to 93 in. and also binds paper to core with cold glues which permit eco-

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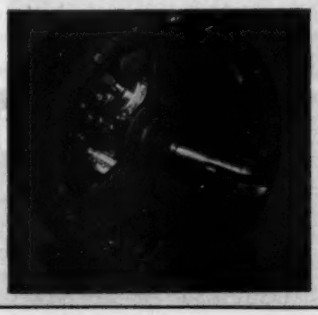

New Products . . .

nomic re-use of culls. *Hudson Sharp Machine Co.*

Circle No. 14 on Readers' Service Card

Corrugated pulleys

New corrugated crown-faced pulleys with 3- to 12-in. diameters are now being marketed. Used for flat-belt drives, they can be supplied with or without a flange. A corrugated surface assures a positive drive. For longer endurance, the pulleys are constructed of cast material. *Robert A. Main & Sons Inc.*

Circle No. 15 on Readers' Service Card

Industrial mixer

The new Model-RL Shear-Flow industrial mixer has been introduced.

Shear-Flow's new RL Hi-Shear head consists of two rotating impellers and two stationary stators enclosed within a cylindrical housing. The fine clearance between impellers and stators results in a more complete reduction of agglomorates within the mixture. The versatile feature of the new head is that it can be powered with 2- to 10-hp. motors, depending on the power requirement demanded by the application.

Larger heads and horsepower ratings are also available. Motor and mixing head changes can be made on the spot in a few minutes, cutting non-productive down-time to a minimum. All parts, subject to immersion, are made of stainless steel and corrosion-resistant materials. *Gabb Special Products Inc.*

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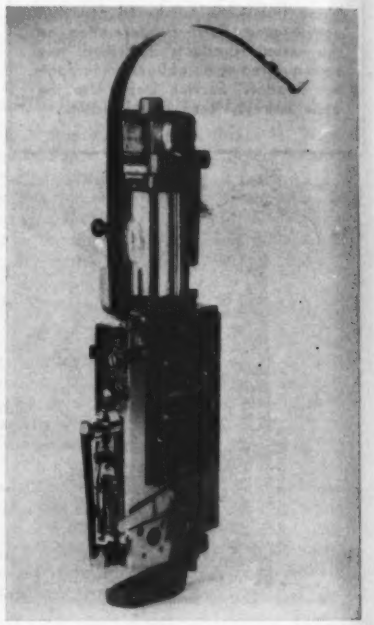

Wire stitcher

The availabilility of a new air-actuated wire stitcher is announced. It is designed for assembling or packaging work.

Designated as the Model-L Champion, the stitcher is a small and compact unit that can be used in many types of automatic equipment or for manual stitching or tacking on a continuous or non-repeat basis. Size of wire it accommodates is from No. 27 to No. 25 round and 21 × 25 flat wire.

Easily mounted, this machine is of particular value to a manufacturer who wants to mount multiple units to stich one object with several stitches at one time. It may also be grouped for various patterns of fastenings as required. It can stitch downward, upward, horizontally or at any angle. *Acme Steel Co.*

Circle No. 17 on Readers' Service Card

Paper coating additive

A new paper coating additive, called Atlas 239, has been marketed. It is a skilful blend of a plasticizing lubricant with surface-active agents especially designed for plasticizing adhesive films in coating formulations.

The use of this additive in a coating mixture imparts unusual flexibility to the adhesive film without impairing adhesion.

This improved film flexibility tends to eliminate dusting on the calendars, without hindering the drying effort.

By using Atlas 239, the following improvements have been found in various coatings: improved gloss, brightness and fold; better ink receptivity; no anti-foaming compound required; better flow of the coating color; elimination of dusting; and handling ease. *Atlas Refinery Inc.*

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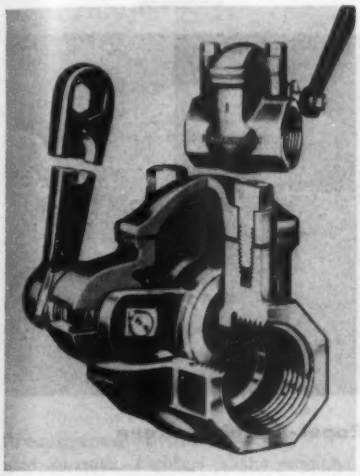

Handy gate valve

A completely redesigned and greatly improved bronze, quick-opening, gate valve, known as Fig. 430-58, is now on the market. It is available in ½- to 4-in. sizes, and has a 75-lb. steam-pressure rating for water, oil and gas.

The valve provides tight shut-off against flow from either direction and still affords quick and easy operation. It features a ball-and-socket joint between self-adjusting disc faces, and accurate guiding to assure flexibility for pressure-tight seating. A deep stuffing box effectively seals the operating stem while permitting easy operation.

The valve is especially recommended for installations where quick operation is required to handle water, oil and low-pressure steams. *Lunkenheimer Co.*

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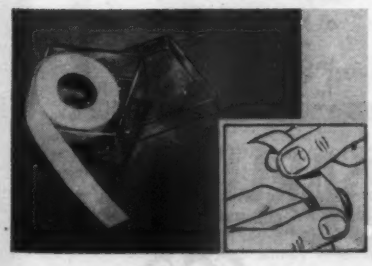


Pipe-joint sealer

A new pipe-joint sealer in tape form, made from Du Pont Teflon, is being produced. Known as Thred-Tape, it positively seals all types of threaded connections under the most difficult service conditions. It safely handles most industrial acids, corrosives, caustics, hydraulic fluids and aromatic fuels. It is also recommended for alkalies, toxics, biological and gas service. Temperature range is from −250° to 500° F., with pressures to thousands of pounds.

The new pipe-joint sealer can be used on plastic, aluminum, stainless steel, ceramic, synthetic rubber and carbon pipe. It prevents seizing and galling, is self-lubricating, and allows connections to be drawn up to a greater degree of tightness. It never hardens, thus permitting easy disassembly of joints even after years of service. *Crane Packing Co.*

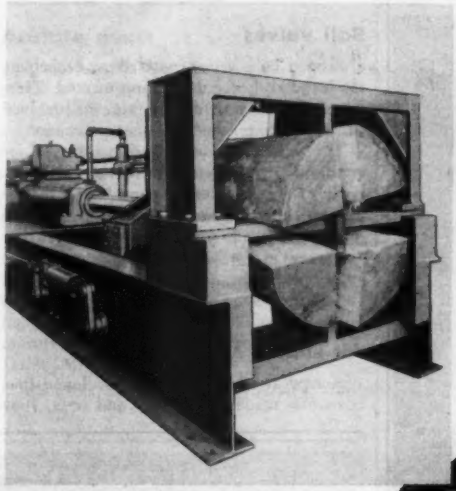
Circle No. 20 on Readers' Service Card

Pressure-reducing valve

The Class AD, pilot-operated, pressure-reducing valve is now being marketed. It will accurately control steam, air, natural and other gases, water, oil or practically any fluid medium.

This pilot valve is designed to react with infinitesimal downstream pressure variation, proportions the upstream high pressure so that this force is available to quickly and accurately control the main valve supply and for maximum dead-end closing force.

The Class AD valve is capable of pressure reduction from 600 psig. initial to as low as 1 psig. reduced, in one step. All



ONE STROKE DOES IT!

MURCO HYDRAULIC WOOD SPLITTER

- **For processing logs too large in diameter to be handled by the chipper.**
- **Capacity approximately 1 log per minute.**

The MURCO Hydraulic Wood Splitter does the job so that handling and number of operations are reduced to a minimum. It is equipped with a Star type stationary axe that quarters the wood in one stroke. Its capacity is approximately 1 log per minute (based on the calculation that it takes about thirty seconds to load the machine with the log to be split). Extremely heavy construction, this is equipment designed for heavy duty . . . base is an all-welded design from structural steel . . . axe knives are steel plate flame hardened and strongly reinforced to withstand the impact of splitting . . . cylinder and ram of heavy duty construction Typical installations — Rayonier, Inc., Doctortown, Georgia; Olin Mathieson Chemical Corp., Monroe, Louisiana; Scott Paper Co., Mobile, Alabama; Owens-Illinois, Tomahawk, Wisconsin; Container Corporation of America, Fernandina Beach, Florida; Kansas City Star Co., Park Falls, Wisconsin.

WRITE
for proposal and quotations to meet your pulpmill requirements . . . specify maximum diameter and length of wood to be split.

Overall dimensions of MURCO Hydraulic Wood Splitter for 36" diameter wood 5'3" long are 21' long x 5'2" wide, x 5'8½" high.

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FLIPPING the LINT OFF "FLIP-TOPS"

Jenkins' METLKOR Web Cleaning Brush of DuPont Tynex Nylon

The gravure production plant of the Downingtown Paper Box Company, Downingtown, Pennsylvania is an engineering triumph. Here, Marlboro "flip-tops" are produced on Champlain presses at speeds up to 2400 cartons per minute.

HERE'S WHAT THE DOWNINGTOWN PAPER BOX COMPANY SAYS: Mr. George J. Wolfer, Gravure Supt. says: "Jenkins' METLKOR brushes are contributing to the overall economy and quality that is so important to our production. When we reorder brushes, they will be Jenkins' METLKORS."

HERE'S WHAT THE MANUFACTURERS OF THE CHAMPLAIN INLINE GRAVURE EQUIPMENT, OF BLOOMFIELD, N. J., SAY: "The Jenkins' METLKOR brushes used in the web cleaning process of our Champlain inline gravure equipment are superior in performance and efficiency and are providing satisfactory and economical operation for our customers all over the world."

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New Products . . .

main valve and pilot valve parts and connections are made within the flanges of the main valve.

A minimum of maintenance is required because the assembly consists of a minimum number of working parts. Connections are readily accessible for inspection so that main valves and pilot valves, when necessary, can be reconditioned without removal from the pipe line. *C. E. Squires Co.*

Circle No. 21 on Readers' Service Card

Ball valves

Bronze ball valves with Buna-N rubber seats and seals are now being offered. They are said to provide perfect air-pressure control with a minimum of maintenance.

The valves are used at junctures of an overhead air-pressure system that provides power for heavy-duty stamping and blanking machines. They transmit a constant pressure of 90 to 100 lbs. with no leakage. *Jamesbury Corp.*

Circle No. 22 on Readers' Service Card

Air shaft

A new air shaft has been developed that is custom made in all types and sizes. It is tradenamed the Nim-Cor air shaft.

It features: simple effective design and fine workmanship to insure a rugged, durable light-weight shaft; multi-point contact to produce uniform rigidity of core-reducing run-out and sag at a minimum; and fast-acting positive grip to eliminate slippage and damage to cores.

The new low-cost air shaft is said to be long-lasting and require less maintenance. *Nashua Industrial Machine Corp.*

Circle No. 23 on Readers' Service Card

Paper-machine screen

A new totally enclosed, paper-machine screen for delivering stock to the head box at the desired pressure has been developed. Called Model-10 Centriscreen, it handles

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about 2800 gpm. of stock, depending on character and consistency.

The new unit is said to be ideally suited for application ahead of smaller fourdrinier machines and on cylinder machines requiring a screen for each mould. Identical in design and structure with the company's larger Model-14, Model-10 operates smoothly and continuously without screen-plate breakage or erosion. *Bird Machine Co.*

Circle No. 24 on Readers' Service Card

Chip fractionators

The availability of a line of chip fractionators for reducing the size of chips prior to digesting has been announced. They are available with a variety of plate designs and disc diameters, with the choice dependent upon production requirements.

Laboratory tests indicated that chip fractionation may result in overall yield increase, reduction of active alkali, reduction of screen rejects, shortening of cooking time in the digester, the elimination of the pre-knotter operation and an improvement of strength characteristics. *Sprout, Waldron & Co. Inc.*

Circle No. 25 on Readers' Service Card

Pressurized refiner

A pressurized refiner with a unique, twin-flow, feed arrangement and self-balancing thrust is now being offered.

Basic to the new design is the floating rotor-shaft assembly rotating between a fixed and moveable head. A set of refining plates is mounted on each face of the rotor as well as on the two stationary heads. Pressure between the refining plates is hydraulically controlled. The reportedly unusual design of the twin-faced rotor eliminates the necessity for heavy-duty thrust bearings and simplifies maintenance.

The refining surface of the pressurized refiner is equal to twice that of a standard single-disc refiner. All metal parts coming in contact with the pulp are made of corrosion-resistant materials, unless otherwise specified. *Sprout, Waldron & Co. Inc.*

Circle No. 26 on Readers' Service Card

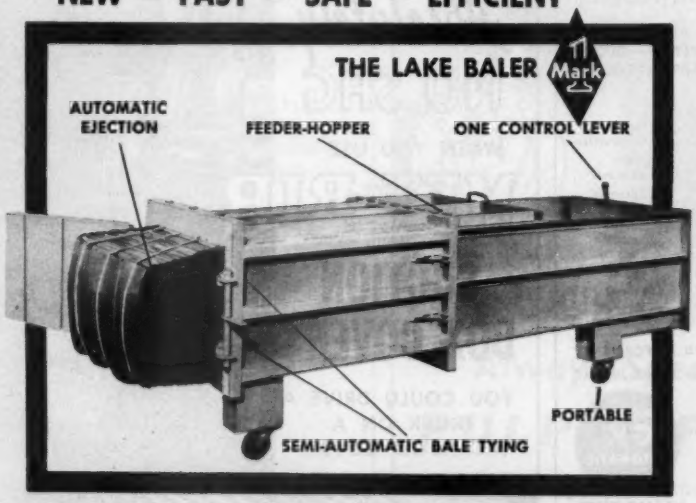
Acetate gums

A new series of non-congealing starch products has been developed. They show distinct advantages in a wide range of surface sizing and coating applications, according to reports.

Known as the new series of Mira-Film acetate gums, they range from a very high to a very low viscosity. Outstanding in paste- and film-forming properties, the Mira-Film gums make pastes of excellent flow, but with minimum penetration into the body stock. They have good water-holding characteristics and produce films of unusual flexibility and strength. *A. E. Staley Mfg. Co.*

Circle No. 27 on Readers' Service Card

NEW – FAST – SAFE – EFFICIENT



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Will Save You Time — One man can dispose of tremendous quantities of trim, boxes and other miscellaneous materials.
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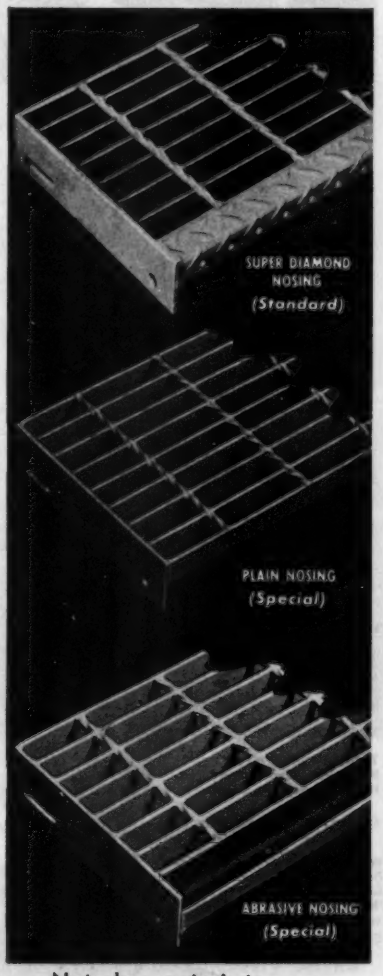

Note how spirals in cross bars alternate right and left and are slightly raised above bearing bars for an extra margin of safety.

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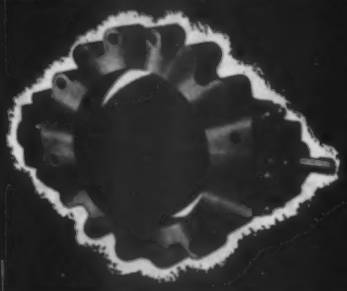

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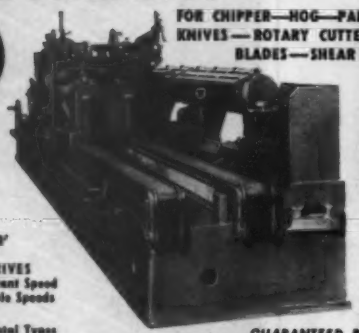
FOR CHIPPER—HOG—PAPER—VENEER KNIVES — ROTARY CUTTERS — DOCTOR BLADES — SHEAR BLADES, ETC



EXTRA HEAVY DUTY Traveling Wheel Type
Capacity— 84" to 396"
Motors— 7½ to 40 HP
Speeds—10' to 100' and faster
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Mechanical—Constant Speed
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WHEELS
Cylinder or Segmental Types
16 — 20 — 24" Diameter

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2. Finest Materials
3. Advanced Design
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We Guarantee our Machines to Deliver the Maximum in Precision Ground Knives per Hour with the Finest and Sharpest Edges for Longer and Better Cutting Action

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Capacity — 32" to 196"
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Table Speeds — Hydraulic (10' to 80' per min.); Mechanical (Constant)
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Bearings — Ball and Roller Types

TABLE DRIVES
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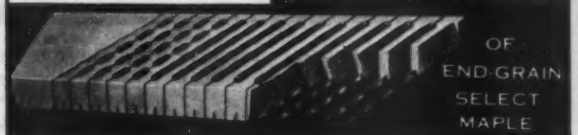

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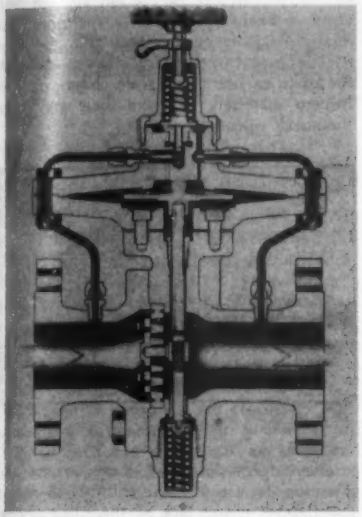
New Products . . .



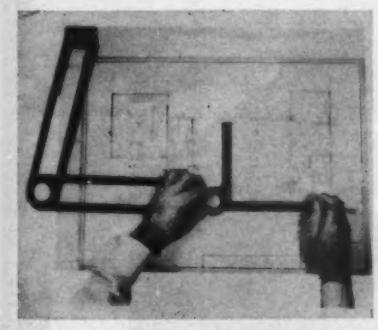
Pressure regulator

An all-new, pilot-operated pressure reducing valve, incorporating a patented sliding gate and plate main valve for steam water, oil, gas, air and chemicals is announced.

The valve features an integral pilot with filter screen; oversize, clog-resistant passages and a ball bearing adjusting screw with handwheel; a short stroke with metal seats and metal diaphragms to give the valve long life with minimum maintenance; straight through flow to give low turbulence through the main valve for accurate regulation; and self-lapping seats for providing tight shut off.

The unit is available in sizes of 2½ and 3 in. The body is cast-iron flanged with 125 or 250 psi ASA connections. It is suitable for pressures up to 250 psi and temperatures to 406°F. *OPW-Jordan Corp.*

Circle No. 28 on Readers' Service Card



Portable drafting machine

A new 3½-lb. portable drafting machine has been manufactured. Called the Draftette Senior No. 12, it has the advantages of the company's older and smaller model. It folds like a jackknife to fit into a briefcase and can be opened for attachment to its light-weight, 20- × 26-in. drawing board, a desk or a table in a matter of seconds.

The black anodized-aluminum Draftette Senior features a new one-piece, 6- × 9-in. interchangeable scale with specially processed white numerals that cannot rub off. It is divided into 16ths or 10/50ths, with a 360° protractor. The new instrument eliminates work-area clutter by replacing T-squares, rulers, protractor and triangles. At the same time it can cover a 400-sq. in. drawing surface. *David Miller & Associates.*

Circle No. 29 on Readers' Service Card

Blade-type coating machine

A new patented, blade-type, coating machine for on- and off-the-machine clay coating is being offered. Called the Flexiblade, it features an enclosed fountain and positive feed of coating without cascading of coating from the blade.

Coating weight can be varied and controlled by adjustments while the machine is running. It can be operated with either a positive feed or recirculation of the coating. The coating chamber is accessible for rapid blade change and clean-up. The machine can operate over a full range of paper-machine speeds.

The Flexiblade coater uses an inverted flexible steel blade to deliver a smooth, pattern-free coating. It handles high solids coating which requires less adhesive, results in higher brightness and cuts down drying time. *Dilts Div., Black-Clawson Co.*

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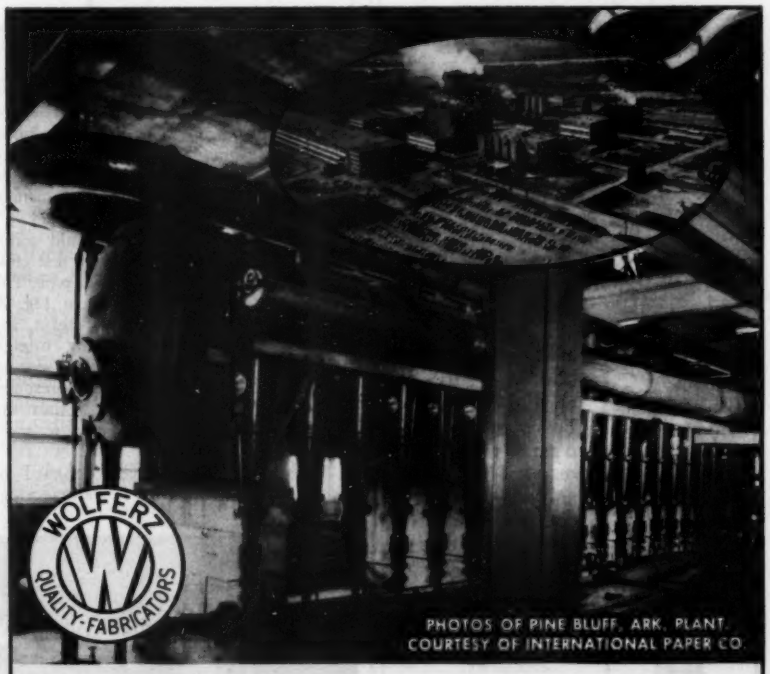

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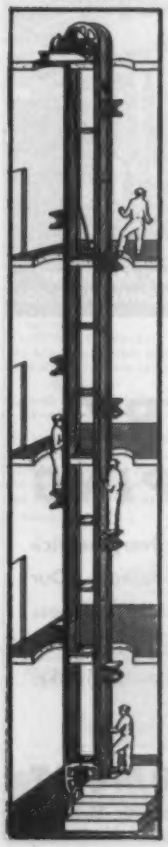

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Humphrey is the original Manlift Elevator, made continuously since 1887.

New Products . . .

Self-cleaning shower

The development of a new, economical, easy-to-maintain, self-cleaning shower has been announced. Featuring a "trouble-free" nozzle, it is applicable for white-water shower installations and fresh-water installations.

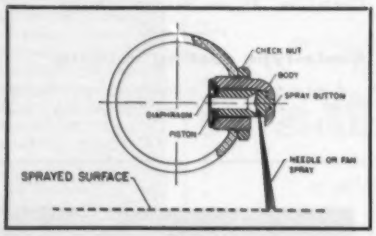

Fig. 1

As shown in Fig. 1, when average-sized particles become lodged in the nozzle, the piston oscillates and frees the obstructions. This self-cleaning action, which automatically takes place while the showers are in operation, usually prevents agglomerates from forming.

However, if a large plug should occur, it is easy to release it quickly by first closing the water valve in the shower pipe. The piston then retracts, as shown in Fig. 2. When the water is turned on again, the entire pipe is flushed and the foreign matter is dislodged from the nozzle during the brief interval before the piston resumes its normal operating position against the spray button. This above procedure takes only a moment.

These nozzles have been designed to serve as natural obstacles to particle clogging so that in most cases the particles do not come in contact with the nozzle opening at all.

Figs. 1 and 2 also show that the nozzles are mounted on a tangent instead of at the bottom of the pipe where any foreign material is likely to collect. Furthermore, the nozzle assembly extends well into the pipe itself. These two features make it difficult for particles like metal scale chips or other foreign materials to make their way into the nozzle opening.

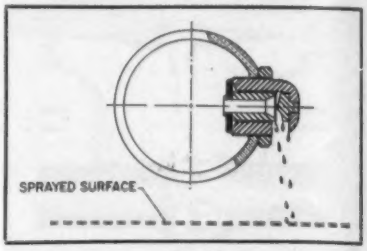

Fig. 2

The tangent design of these nozzles allows for the use of these showers in many installations where lack of space eliminates conventional showers. These showers permit a great variety of spray patterns from needle to 80° fans. This makes them widely applicable for head boxes, fourdrinier wires and knock-offs, felts, washers, screens, cylinder molds, save-alls, filters, etc.

Special screw-in-mountings in the nozzle provide ease and speed of replacement when higher or lower pressure nozzles are called for. Changes in spray patterns may also be made without disturbing the pipe.

These showers are available in either brass or stainless steel. *Lodding Engineering Corp.*

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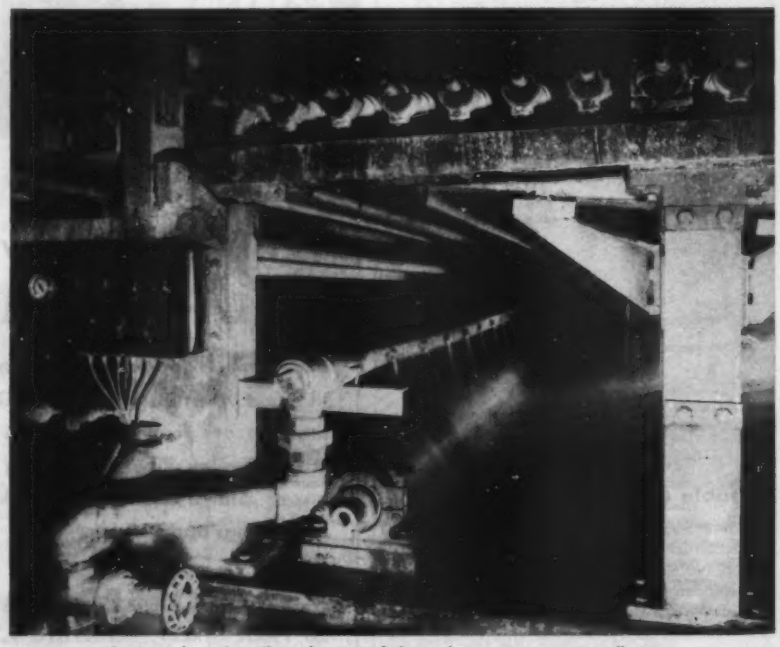

Design of nozzles allows for use of these showers in many installations.

NEW LITERATURE

Books

CORROSIVE PROPERTIES — FORMALDEHYDE TO POTASSIUM NITRITE. Prepared and published by DECHEMA, Rheingau-Allee 25, Frankfurt (Main) 7, West Germany. Pages: 100. Prices: DM 40., per installment. (DM 32. to Dechema members).

The eighth installment of Dechema- Werkstoff-Tabelle describes the corrosive properties of formaldehyde to potassium nitrite. It furnishes precise data on the chemical resistance of about 100 constructional materials and 46 corrosive substances. Six pages each are devoted to detailed information on glycerine and glycol, and eight pages are devoted to potassium chloride. There are also pages dealing with urea, potassium and potassium-sodium alloys, potassium bichromate and potassium nitrate.

The Dechema-Werkstoff-Tabelle, reportedly recognized as a standard reference works, will ultimately consist of 1200 pages, of which 800 have already been published. Single copies cannot be supplied, only the complete work in consecutive page numbers is obtainable.

Full particulars are given in a free 20-page pamphlet (size DIN A4) which may be obtained by writing to Dechema.

INDUSTRIAL FATTY ACIDS AND THEIR APPLICATIONS. Edited by E. Scott Pattison. Published by Reinhold Publishing Corp., Dept. B-291, 430 Park Ave., New York 22. Pages: 230. Price: $7.00.

This book covers the production and processing of fatty acids, emphasizing the practical technology and chemistry involved with it. It includes an up-to-date review of the chemistry, technology and applications of commercially important derivatives.

The book also reflects the growing industrial importance of fatty acids derived from tall oil—one of the most important recent advances.

USDA Reports

STATION PAPER available from the Southeastern Forest Experiment Station. Station Paper No. 100—Forest Insect Conditions in the Southeast During 1958, by W. P. Nagel. This study is available by writing to Joseph F. Pechanec, director, Southeastern Forest Experiment Station, Asheville, N. C.

INFORMATION CARD 98, Insects Attacking Pines—South Carolina, has been prepared and printed jointly by the Clemson Extension Service of Clemson Agricultural College and by the South Carolina Commission of Forestry. More detailed information is given in Bulletin 116, Forest Insects and Diseases of South Carolina. Copies of the information card or the bulletin may be obtained by writing to Clemson Extension Service, Clemson Agricultural College, Clemson, S. C.

Booklets

PULP AND PAPER STATISTICS is the title of the 91-page report, (December 1958), prepared by the Organization For European Economic Cooperation. This report deals with the trend of the pulp and paper market in the OEEC countries and Finland for the first six months of 1958. It summarizes and compares production, consumption and international trade with the same periods in 1956 and 1957. The report may be purchased for $1.00 from the OEEC Publications Office, 1346 Connecticut Ave. NW., Washington 6, D. C.

CONVENIENT TABLES AND FORMULAS is the title of a new 120-page booklet, published by Westinghouse Electric Corp. It includes convenient tables, formulas and graphical symbols which summarize electrical data, properties of materials, heat transfer and steam information, measurements, etc. For a copy of booklet B-3677D, call the nearest Westinghouse Apparatus sales office or write to Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Pa. Price: $.50.

Manufacturers' Publications

These items are numbered for your convenience. Copies of the publications may be requested at no obligation through our Readers' Service Dept. Use the handy business reply card which accompanies this issue.

Industrial foam and bubble preventives

Arnold, Hoffman & Co. Inc. announces its new convenient four-page bulletin, discussing its industrial foam and bubble preventives. It describes individual defoamers and eveners with respect to physical appearance and characteristics; percentage of active-ingredients density in pounds per gallon and pH 5-per cent emulsion; general recommendations for usage; and various specific applications. Several defoamers are cited as giving good results when used with paper-coating mixes, and special mention is made wherever this condition is obtained.

Circle No. 32 on Readers' Service Card

Consistency regulator

Krofta Engineering Corp. has released a new four-page bulletin on its consistency regulator for paper stock. Discussed in the bulletin are

NOW—CHECK ACCURACY WHILE YOU CHECK MOISTURE!

New Electronic Moisture Registers have first "built-in standard" in a 3-second, portable moisture tester.

NOW DIAL ACCURACY IS ASSURED, even under the extremes of production-line use. With *self-checking standard*, Moisture Register's new Model 5's are checked and adjusted for calibration accuracy right on the job—by any untrained operator. He simply fits electrode to standard. Then with new trimmer he sets dial for perfect alignment. Gives calibration adjustment *in the field*. You get practical accuracy down to 0% ... 3-second spot tests for moisture wherever your product may be. Portable, light weight, battery operated, new rugged construction with miniature tube. Factory-set to your needs.

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- Paperboard
- Insulation boards
- Paper Bags
- Plastics

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ELECTRONIC MOISTURE REGISTER Instruments

Moisture Register Company, Dept. PI
P. O. Box 910, Alhambra, California
Please send data on new Model 5's.

We are testing _____

in moisture range from ____ **%** to ____ **%**

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PUT ACTION IN YOUR SAFETY PROGRAM

Add a touch of showmanship to your safety program. Films let you tell your training story with the dramatic impact of pictures . . . action . . . sound. You can cut your safety training in half, give fewer refresher courses and get better results by using training films.

Here are three film sets that will help you arouse and keep alive interest in your safety program. And there is no better way to teach foremen how to be better supervisors.

SPEAKING OF SAFETY

A brand new set of films that will teach your foremen and supervisors the tips they should know about making safety talks, and how to transmit management's ideas and plans. Six 35mm sound slidefilms and leader's manual in an attractive leatherette case.

HUMAN FACTORS IN SAFETY

This is a series of six 35mm sound slidefilms with leader's manual that may be used for an advanced safety course. Each film deals with one aspect of the complex art of handling people. Collectively, the films show how to train workers, how to keep experienced people on their toes and how to win respect, cooperation and loyal support.

SAFETY MANAGEMENT FOR FOREMEN

A set of ten 35mm sound slidefilms—all that is needed for a course in safety fundamentals. The films explain how to organize a safety program, what part the foreman plays in the program and how safety increases production. They also discuss specific safety activities, such as machine guarding, safety inspections, the first aid program, etc. Complete with leader's manual in an attractive leatherette case.

Write for complete information and details to the

NATIONAL SAFETY COUNCIL

425 North Michigan Ave., Chicago 11, Illinois

New Literature . . .

its features and benefits, along with six diagrams of typical installations. The water-dilution valve is also mentioned and illustrated.

Circle No. 33 on Readers' Service Card

Brick-floor repair

Master Builders Co. has issued a new bulletin which fully explains, with illustrations, how the repairing of joints in worn or corroded brick and tile floors can be reduced to seven easy steps. The bulletin shows how Embeco Non-Shrink mortar will produce tight joints and lower maintenance costs for brick and tile floors.

Circle No. 34 on Readers' Service Card

Wooden tanks

Arrow Tank Co. Inc. is offering a new illustrated brochure which describes its wooden gravity and sprinkler tanks along with their advantages. Conical roofs, flat covers and casings are also discussed.

Circle No. 35 on Readers' Service Card

Log skinner

Carl W. Mullis Engineering & Mfg. Co. Inc. is offering a new eight-page bulletin on its heavy-duty, ring-type debarker, said to be good on any type of log. Complete specifications, outstanding features and advantages of the log skinner are mentioned in this highly illustrated bulletin.

Circle No. 36 on Readers' Service Card

Nomographs

Graver Water Conditioning Co. has released two nomographs — one on the valve of recovered water and the other on the amount of waste chemicals which can be recovered. The nomographs are said to be of special value to chemical, pulp and paper, metal finishing and other plants that now discharge their waste water. Instructions on their use are also included.

Circle No. 37 on Readers' Service Card

Check valves

Lunkenheimer Co. has published a new circular describing its check valves. The circular illustrates some of the many types of check valves and their specifications in the Lunkenheimer line.

Circle No. 38 on Readers' Service Card

Overhead steel-strapping tool mount

Acme Steel Co. announces the availability of a new folder on the E45 overhead tool mount — a low-cost, mobile-suspension unit for steel-strapping tools. The folder is illustrated with photos of typical installations.

Circle No. 39 on Readers' Service Card

Distributor roll

Sandy Hill Iron & Brass Works is offering a highly diagramed, two-page circular which describes the company's distributor roll and its papermaking applications.

Circle No. 40 on Readers' Service Card

Chemical treatment for water wells

Layne & Bowler Inc. has issued Bulletin No. 601, Chemical Treatment for Water Wells. This new, three-color, illustrated folder answers such questions as—what it is, who needs it, when it is needed and why do it.

Circle No. 41 on Readers' Service Card

Cutter-piler unit

Clark-Aiken Co. announces the availability of a new brochure that fully describes the company's re-designed Type-D cutter-piler unit. The six-page brochure graphically depicts the many remarkable features and advantages of the four different models of the cutter for general purpose use, single or multiple sheeting, sheeting pre-printed stock from rolls and sheeting printed stock direct from the press.

Circle No. 42 on Readers' Service Card

Flexible-cushion coupling

Dodge Mfg. Co. has issued a new highly illustrated, 12-page bulletin, explaining the unique characteristics of its Para-flex flexible-cushion (rubber-tire type) coupling. Data on coupling selection, service factors and the selection of sizes are given. Also included is information on Dodge Para-flex bored-to-size couplings, and bored-to-size flanges with straight bore or taper bore.

Circle No. 43 on Readers' Service Card

Limit switches

Micro Switch Div., Minneapolis-Honeywell Regulator Co. has just published a 16-page catalog covering a complete line of heavy-duty limit switches. This literature is published as an aid to the plant engineer and maintenance man as well as the designer of original equipment. It lists switches with a variety of contact arrangements for either ac or dc applications. Several actuator designs in each switch type are shown.

Circle No. 44 on Readers' Service Card

Dust collectors

Torit Mfg. Co.'s latest information sheets publicize its two versatile, compact and self-contained cabinet cloth filter dust collectors, said to have a collection efficiency of better than 99.9 per cent, even with particles smaller than one micron. Photographs illustrate internal design and typical applications of the collectors. These information sheets also include multiple rating tables complete specifications and a dimensional drawing.

Circle No. 45 on Readers' Service Card

Jet cleaning tool

Dowell Div. of Dow Chemical Co. has issued a new bulletin describing its high-pressure, automatic bundle-jetting tool, used to clean the external surfaces of heat-exchanger tube bundles. This bulletin explains the purpose of its development, how it works, its accessory equipment and its results.

Circle No. 46 on Readers' Service Card

Flexible rubber pipe

Manhattan Rubber Div., Raybestos-Manhattan Inc. announces the availability of its new illustrated brochure describing Condor flexible rubber pipe.

Circle No. 47 on Readers' Service Card

The Paper Industry
Professional and Business Services

J. E. SIRRINE COMPANY
ENGINEERS Since 1902
GREENVILLE, SOUTH CAROLINA

Design — Consultations
Paper & Pulp — Reports
Water & Waste — Appraisals
Steam & Hydro Power — Steam Utilization

CLASSIFIED ADVERTISING

COATING AND COLOR MAN WANTED

Experienced coating and color man with technical background for a bleached kraft food board mill. Excellent opportunities, salary and benefits. Please send resume including education, experience and salary requirements. Write Personnel Manager, American Box Board Co., Filer City, Michigan.

WANTED — ELECTRICAL ENGINEER

Design engineer for automatic control and general design work. Board work involved. Excellent opportunity in large central engineering office. Give experience and salary range with application. Location south. Write Box 679, The Paper Industry.

WANTED: Tour Boss for two machine high grade folding box board mill in New England area. Age 30-45. Apply Box 680, The Paper Industry.

Pulp and Paper Mill is looking for an engineer under 45 years of age with a B.S. degree in Mechanical Engineering and a minimum of 5 years of experience. He should have experience in the supervision, administration and planning of maintenance employees in a fully integrated pulp and paper mill.

This engineer is to be in charge of all area maintenance foremen and will be responsible to the Plant Maintenance Superintendent.

Please send resume including education, experience and salary requirements. Write Personnel Manager, American Box Board Co., Filer City, Michigan.

Paper Mill is looking for a graduate engineer, under 45 years of age with a B.S. degree in Electrical Engineering and a minimum of 5 years experience in Plant Electrical Engineering. This man should have experience in medium voltage generation and distribution and low voltage distribution. He must have a good working knowledge of medium and low voltage motor control. Some experience in industrial lighting is also desirable.

This engineer is to have complete charge of all plant electrical maintenance in a plant that generates 20,000 KW of its own power and distributes it to departmental processes ranging from wood processing to three paper machines. He will be responsible in this position to the Plant Maintenance Superintendent. Please send resume including education, experience, and salary requirements. Write Personnel Manager, American Box Board Co., Filer City, Michigan.

RESEARCH AND DEVELOPMENT MANAGER

Integrated board and carton manufacturer in Michigan, $30 million volume, is seeking a head for their Research and Development operations. Major functions are (1) new and diverse product development, and (2) the improvement of existing products. It is essential that the Manager have creative skills and be aggressive enough to lead into a more comprehensive program. A background in the board and carton industry is considered necessary. Advanced degree highly desired in chemistry or chemical engineering. Age 35-45 preferred. This opportunity should appeal to a second man in a large organization or to an established Manager who seeks an opportunity to make major contributions and accomplish results. Attractive salary. Your interest invited in confidence. Please submit full information. Address replies to Box 681, The Paper Industry.

CHEMICAL ENGINEERS
BOWATERS SOUTHERN PAPER CORPORATION

South's largest Newsprint Manufacturer has permanent positions available for Chemical Engineers. Mill's Technical Staff now being enlarged because of extensive expansion program. Degree in Chemistry Engineering from accredited college required. Minimum of two to five years experience in Kraft and/or Newsprint Mills essential. Starting salary based on qualifications with periodic merit increases. Complete insurance, retirement and vacation programs established. All replies will be answered and treated in confidence. Reply immediately submitting summary of experience to:

Industrial Relations Department
BOWATERS SOUTHERN PAPER CORPORATION
Calhoun, Tennessee

NEW SLIMICIDE

(tributyl tin oxide complex)

Agents wanted to handle this new slime killer priced at $2.40 per lb. Every mill who have tried this unique material are now regular users. Paper mill personnel may act as agents in spare time. Inquiries will be held confidential. Write Box 672, The Paper Industry.

CHARLES P. RAYMOND SERVICE, Inc.

THE POSITION YOU WANT may be available right now. The demand for executives is increasing. Salaries are attractive. You are invited to send us your resume in confidence.

THE EXECUTIVE YOU NEED may be listed with us. Employers find our Service helpful and time saving.

Your phone call, wire or letter will bring prompt attention. LIberty 2-6547 — 294 Washington St. — Boston 8, Mass.

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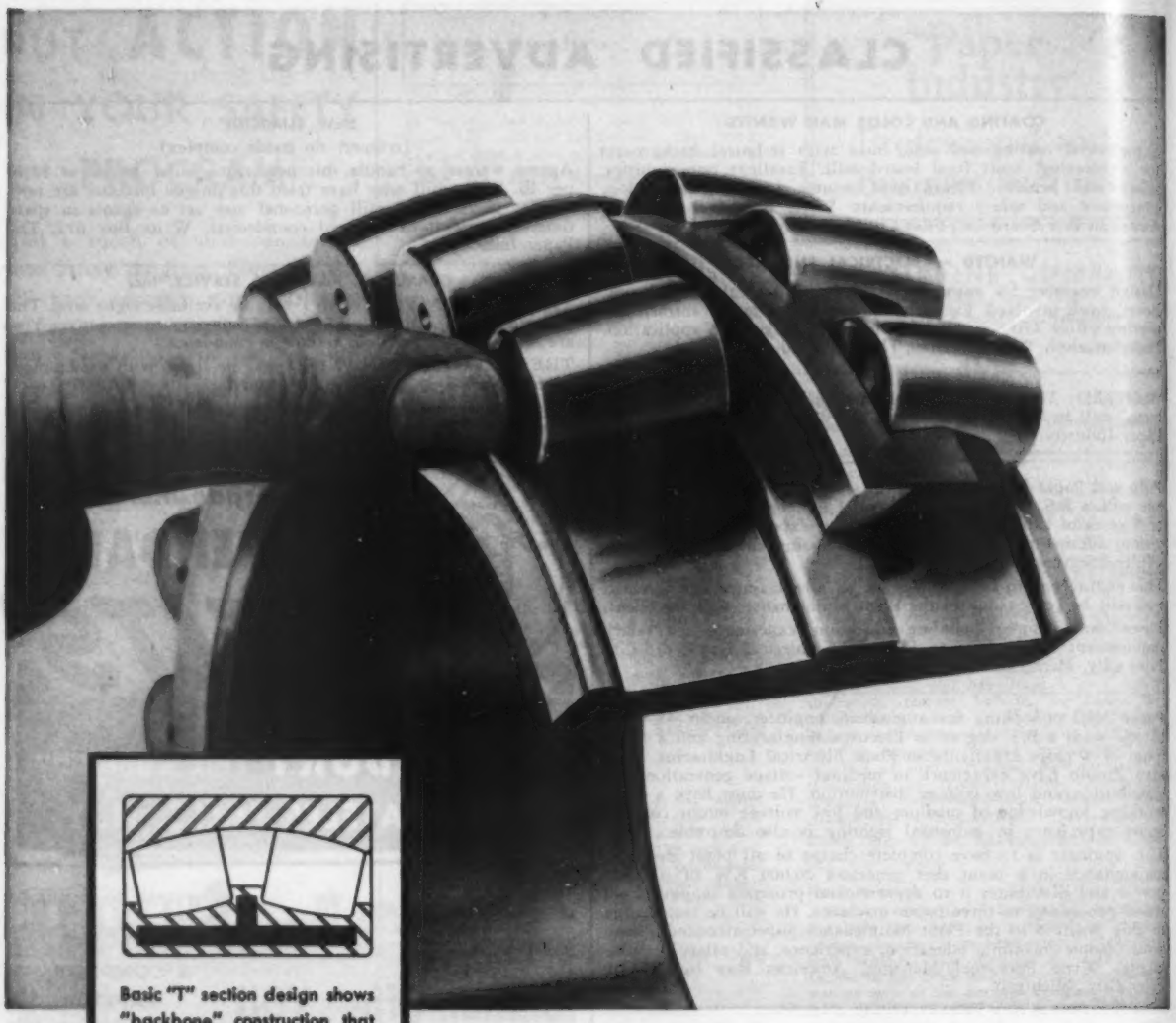
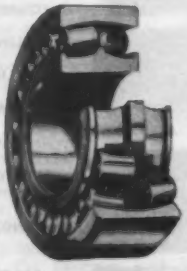


Basic "T" section design shows "backbone" construction that insures positive roller guidance and stability without skewing under all load conditions.



For roller stability...

there's nothing like "the bearing with the backbone"

The only *positive* way to guide rollers is by an integral center guide flange—backbone of the *Torrington* Spherical Roller Bearing. No floating ring can match it for stability under heavy radial and thrust loads.

This "bearing with the backbone" insures true rolling motion . . . prevents stress concentration . . . means minimum friction. It makes possible open-end cage design, too, with no shrouds to impede circulation of lubricant to bearing contact surfaces. There is less heating and more positive lubrication.

The integral center guide flange is adapted from the same principle used in the design of Torrington Tapered Roller Bearings. This refinement is typical of Torrington's uncompromising engineering that assures you the ultimate in bearing performance. **The Torrington Company, South Bend 21, Ind.—and Torrington, Conn.**

TORRINGTON BEARINGS

District Offices and Distributors in Principal Cities of United States and Canada

SPHERICAL ROLLER • TAPERED ROLLER • CYLINDRICAL ROLLER • NEEDLE • BALL • NEEDLE ROLLERS • THRUST

MARKET QUOTATIONS

RAGS (Domestic)

New Cotton Cuttings

The following are brokers' and large dealers' average buying prices for sizeable lots in cents per pound f.o.b. New York:

	per cwt.
No. 1 white shirt cuttings	13.00— 13.50
Soft unbleached muslins	15.50— 16.00
Fancy shirt cuttings	4.50— 5.00
No. 1 percales	5.50— 6.00
No. 1 washables	2.25— 2.50
No. 1 light silesias	6.50— 7.00
No. 1 light prints	4.75— 5.00
Light flannelettes	6.50— 7.00
Cottonades	2.75— 3.25
Blue overall cuttings	6.75— 7.25
Blue cheviots	6.75— 7.25
Canton flannels, bleached	10.50— 11.00
Canton flannels, unbleached	10.50— 11.00
Osnaburg cuttings	9.50— 10.50
Underwear cuts, bleached	14.50— 15.00
Underwear cuts, unbleached	14.50— 15.00
Sun tan khaki cuttings	5.00— 5.50
American linen cuttings	6.75— 7.25

Cotton Rags

The following are prices, cents per pound, paid by dealers and brokers f.o.b. New York:

	per cwt.
No. 1 roofing (Chicago)	.90— .95
No. 2 roofing (Chicago)	.70— .75
Twos and blues, repacked	1.50— 1.75
Thirds and blues, repacked	1.50— 1.75
No. 1 whites, repacked	—
No. 1 whites miscellaneous	—
No. 2 whites, repacked	—
No. 2 whites, miscellaneous	—

RAGS (Foreign)

(ex dock New York City)

New Rags

per cwt.

Nominal:
- New dark cuttings
- New mixed cuttings
- New light silesias
- Light flannelettes
- Unbleached cuttings
- New white cuttings
- New light oxfords
- New light prints

Old Rags

per cwt.

Nominal:
- No. 1 white linens
- No. 2 white linens
- No. 3 white linens
- No. 4 white linens
- No. 1 white cottons
- No. 2 white cottons
- No. 3 white cottons
- No. 4 white cottons
- Extra light prints
- Ordinary light prints
- Medium light prints
- Dutch blue cottons
- French blue cottons
- French blue linens
- Checks and blues
- Linsey garments
- Bark cottons
- Old shopperies

ROPE and BAGGING

F.o.b. and ex dock New York City

Gunny No. 1, domestic	—
Gunny No. 1, foreign	—
No. 1 manila rope, domestic	—
No. 1 manila rope, foreign	—
New burlap cuts (soft)	—
Sisal strings	—
Mixed strings	—

WASTE PAPER

The following are prices, dollars per net ton, paid by brokers and large dealers for carload quantities of baled stock, f.o.b. cars New York:

No. 1 hard white envelope cuttings	85.00— 95.00
No. 1 hard white shavings	70.00— 75.00
No. 1 soft white shavings	50.00— 55.00
Soft white shavings, uncoated	60.00— 65.00
Fly leaf shavings No. 1	30.00— 32.50
Fly leaf, woody, No. 1	25.00— 27.50
Mixed colored shavings	21.00— 23.00
No. 1 books and magazines	29.00— 30.00
Ledger stock, white, No. 1	50.00— 52.50
Ledger stock colored, No. 1 (Midwest ship)	35.00—
New manila envelope cuttings (free of groundwood)	70.00— 75.00
New manila envelope cuttings (containing groundwood)	50.00— 55.00
Manila tab cards	72.50— 77.50
Colored tab cards	55.00— 60.00
New northern kraft envelope cuttings	65.00— 70.00
Triple sorted kraft, 100%	35.00— 37.00
No. 1 old kraft	30.00—
White news cuts, No. 1	55.00— 60.00
No. 1 overissue news	17.00— 19.00
Folded news, special	15.00— 16.00
Folded news, ordinary	13.00— 14.00
Old corrugated boxes	22.00— 23.00
New jute corrugated cuts	19.00— 20.00
Mill wrappers	11.00— 13.00
Boxboard cuttings	7.00— 9.00
No. 1 mixed paper	10.00— 12.00

CHEMICALS

F.o.b. New York City

Alum, ammonium	
Granular, bags, works, cwt.	4.30—
Lump, drums, works, cwt.	5.05—
Powdered, drums, works, cwt.	5.20—
1-Arginine, drums, kilo	90.00—
Blanc Fixe	
Direct process, bags, c.l., works, ton	145.00—
L. c. l., ton	155.00—
Bleaching Powder, drums, cwt.	—
Casein, domestic acid precipitated	
30-mesh bags, 10,000-lb. lots or more, shipping point, lb.	.56—
80-mesh bags, 10,000-lb. lots or more, shipping point, lb.	.64—
China Clay, domestic dry-ground, airfloat, 99% 325-mesh bags, c.l., Georgia works, ton	10.00— 12.00
300-mesh bags, c.l., Georgia works, ton	13.50— 14.50
Imported, white, lump, bulk, c. l., ex dock Phila, Portland, Me., gross ton	20.00— .35.00
Chlorine, liquid	
Tanks, single units, works, freight equaled, cwt.	3.15—
Glycerine, refined (CP, USP) 98%, drums c. l., delivered lb.	.29½—
Litharge, commercial powdered	
Barrels, c. l., works, freight equaled lb.	.13¾—
Rosin, gum, c. l., f.o.b. New York, cwt.	
K, M	9.75—
N	9.80—
WG	9.85—
WW	10.40—
Rosin, wood, c. l., f.o.b., shipping point, cwt.	
K, M.	8.50—
N	8.70—
WG	8.90—
WW	9.20—
Saltcake, domestic, bulk works, 100% Na_2SO_4 basis ton	28.00—
Soda Ash	
Dense, 58%, paper bags, c.l. works, cwt	1.90—
Light, 58%, paper bags, c.l. works, cwt	1.85—
Soda, caustic	
Flake, 76%, drums, c. l. works, freight equalled, cwt	5.20—
Solid, 76%, drums, c. l. works, cwt.	4.80—
Sodium Silicate	
40°Be, 1:3.2, turbid, drums, c. l., works, cwt.	1.55—
52°Be, turbid, 1:2.4, drums, c. l., works, cwt.	2.65—
Starch	
Pearl, 140-lb. bags, cwt.	7.51—
Pearl, 100-lb. bags, cwt.	7.36—
Powdered, 100-lb. paper bags, cwt.	7.48—
Sulfur, crude	
Bulk, c. l. mine, contract, long ton	23.50—
Talc	
Domestic, fibrous, N. Y., grd., bags, c. l. works, ton	28.00—
Canadian, ground, bags, c. l. works, ton	20.00— 35.00
Titanium Pigment	
Calcium-rutile base, regular, bags, c. l., lb.	.09½—
High-tinting, drums, c. l., lb.	.14½—
Zinc Oxide Pigment, American process	
Lead-free, bags, c. l. freight allowed, lb.	.14½—
Leaded, 35%, bags, c. l., freight allowed, lb.	.15½—

WOOD PULP

Quotations on domestic and Canadian pulp, dollars per short air-dry ton delivered consuming mills including basic allowances, follow:

Bleached sulfite, No. 1	155.00—
Bleached sulfite, Canadian	155.00—
Unbleached sulfite	135.00—
Unbleached sulfite, Canadian	135.00—
Bleached soda	150.00—
Bleached soda, Canadian	150.00—
Kraft, bleached hardwood	152.00—
Kraft, bleached	157.00—
Kraft, bleached southern	160.00—
Kraft, bleached Canadian	160.00—162.50
Kraft, unbleached southern	120.00—
Kraft, unbleached, Far West	125.00—
Kraft, unbleached Canadian eastern	135.00—
Kraft, unbleached Canadian western	120.00—125.00
Kraft, semi-bleached southern	140.00—
Sulfite screenings	—
Sulfate screenings	—

Quotations on imported wood pulp, dollars per short air-dry ton on dock American Atlantic ports, follow:

Bleached sulfite, Swedish, freight allowed	155.00—
Bleached sulfite, Norwegian, del'd with limited freight allowance	155.00—
Bleached sulfite, Finnish, freight allowed	155.00—
Unbleached sulfite, Swedish, freight allowed	135.00—
Unbleached sulfite, Finnish, freight allowed	135.00—
Kraft, unbleached, Swedish, freight allowed	125.00—
Kraft, unbleached, Finnish, freight allowed	125.00—
Kraft, bleached, Swedish, on dock	157.50—162.50
Kraft, bleached, Norwegian	155.00—

PAPER

Quotations are mill quotations Chicago

Boards (prices per ton, delivered in Chicago, 10 tons or more):	
Plain chip	107.50
News vat lined chip	110.00
.009 chip, rolls	100.00
Filled news	111.50
Solid news	114.50
White vat lined chip	144.50
Chip tube and can stock	112.50
Single manila lined chip	162.50
Single jute lined chip	147.50
Container, 42-lb.	
Kraft liner (per 1000 sq. ft.)	2.68
White patent coated	
.020	175.00
.018	177.50
.016	182.50

Book Paper (f.o.b. Chicago, c.l. cases per cwt):	
No. 1 enamels	20.55
No. 2 enamels	19.55
Machine-coated, 45- to 100-lb.	15.55— 19.00
60-lb. + uncoated offset, 25 × 38 (2000 lb.)	22.25
"A" grade English finish untrimmed, 25 × 38 (2000 lb.)	21.10
Rag Content Bond (white, 5000 to 10,000-lb. sub 20, ream sealed cartons):	per cwt
100% rag	—
75% "	—
50% "	—
25% "	—
Rag Content Ledger (white, 5000 to 10,000 lb., ream sealed cartons):	
100% rag	—
75% "	—
50% "	—
25% "	—
Sulfite Bond (white, 5000 to 10,000-lb. sub 20, ream sealed cartons):	
No. 1	—
No. 2	—
No. 4	—
Sulfite Ledger (white, 5000 to 10,000-lb., ream sealed cartons):	
No. 1	—
No. 2	—
No. 4	—

Newsprint (contract base price)	per ton
Rolls, standard	135.00
Sheets	Standard differentials

Kraft Wrapping — Natural (standard rolls 9- and 15-in. diam.)	per cwt
70-lb. and heavier	8.50
60-lb.	8.75
50-lb.	9.00
40-lb.	9.25
35-lb.	9.75
30-lb.	10.50
25-lb.	11.25
20-lb.	12.25
No. 1 Kraft Butcher — Pink	per cwt
40-lb. only	10.00

(Sheets — Plus 50c cwt)

Patent Reviews

(Continued from page 276)

N-2 with another felt-covered suction roll 18. In this way, the wire side or bottom side of the web is subjected first to two successive presses against a plain-surfaced roll.

It will be noted that the felt run from the suction pick-up roll is downwardly inclined. This is an important feature, affording a distinct advantage, because the downwardly inclined felt traveling away from the suction area of the suction pick-up roll (particularly if the saveall pan is positioned at the off-running side) does not receive water thrown from the perforations of the suction pick-up roll by centrifugal force. The suction pick-up felt is, thus, not subjected to the addition of water; in the next treatment, a suction box on the felt side draws water from the web through the felt. The present arrangement avoids the necessity of drawing water from a felt and through the web at any point in the operation of the presses.

Agitator for pulp stock tanks

U. S. 2,869,841, issued January 20, 1959, to Ben Cowan, describes an agitator for pulp stock tanks, whereby a more efficient circulation and mixing of the pulp stock is obtained at a low speed of rotation of the agitator, with a considerable reduction in the power consumption.

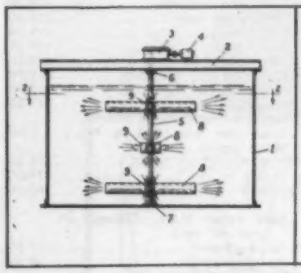


Fig. 5

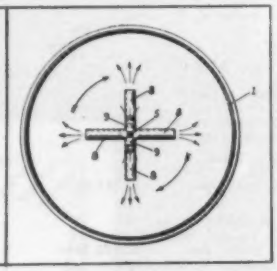


Fig. 6

As shown in Figs. 5 and 6, the stock agitator is composed of a series of open-ended tubes supported on the shaft 5 at various levels inside the tank 1. These open-ended tubes are in the form of a cross and consist of a long tube 8 and a short tube 9, mitred and joined together to form the agitator arms, and are secured together by welding. The agitator arms are provided with a bore through which the shaft 5 is passed. The arms are secured to the shaft 5 at vertically spaced intervals. The number of agitator arms fitted will depend on the height of the stock tank 1., with the spacing of the agitator arms on the shaft 5 being such that a maximum of stock circulation will be induced through the tubes 8 and 9 without danger of flocculation of the stock fibres.

The operation of the apparatus is as follows: When the agitator is at rest, the interior of the pipes 8 and 9 are flooded with pulp stock. As the agitator is rotated, it rotates at a higher rate of speed than that of the liquid within the tank. This is due to the fact that the agitator has a comparatively small sectional area with respect to the large frictional area of the tank. Thus the liquid, confined within the outer ends of the long tube, has a greater centrifugal force than the liquid in the tank immediately surrounding this portion of the long tube; consequently there is a tendency for the liquid to move outwardly of the long tubes into the tank. This creates a hydraulic . . . pressure differential between the openings into the outer ends of the short tube and the long tube; consequently, a continuous pumping action is set up whereby the stock is drawn from the area adjacent the openings into the short tube and is passed out to the outer area of the tank.

By the use of relatively large diameter tubes rotating at low speed, large volumes of pulp stock are moved from the center to the outside area of the tank without creating unnecessary internal surface friction in the tube; as at the low speed of rotation of 20 to 30 rpm., the flow of stock through the tube is only in the neighborhood of 4 to 6 ft. per sec. Further, by moving a large volume of stock slowly there is no appreciable difference in stock level between the center and outer edges of the tank while a complete turnover of the stock in the tank can be accomplished every 5 or 10 min. The low speed of operation also has the effect of keeping down the velocity head imparted to the stock, or the kinetic energy absorbed by pumping.

The relatively large diameter of the tubes 8 and 9 allows for free flow of the stock without fear of the tubes becoming plugged with stock, as is very often the case where relatively small diameter tubes rotating at high speed are used.

Other Patents of Interest to the Pulp and Paper Industry

Subject	Inventor or Assignee	Patent No.	Date
Paper tubes	Cigarette Components Ltd.	2,866,465	12/30/58
Carrying device for containers	American Can Co.	2,866,543	"
		2,866,661	"
Carton-forming unit	Continental Can Co. Inc.	2,866,584	"
Kraft board folding egg case	Lester W.Alexander	2,866,585	"
Paper, plastic container with dispensing closure	George A. Moore	2,866,586	"
Double-walled box	Diamond Gardner Corp.	2,866,587	"
Recessed automatic-bottom carton	Standard Packaging Corp.	2,866,588	"
Tear strip for envelopes	Lawrence F. Zacker	2,866,589	"
Overwrapped cigarette carton	Reynolds Metals Co.	2,866,590	"
Paper bag with locking means through slits	Equitable Paper Bag Co. Inc.	2,866,591	"
Magnesium hydroxide-sized, photo-sensitive paper	W. C. Hamilton & Sons	2,866,707	"
Device for holding down flaps of cardboard boxes	Clifford J. Streeter and Kenneth R. Kadoun	2,867,019	1/6/59
Multiple-display boxes	Paper Mate Mfg. Co.	2,867,048	"
Holder for milk container	Nunzio Bramante	2,867,364	"
Cup with handle and spoon	Harry B. La Tourette Jr.	2,867,365	"
Packaging crate	Chicago Mill & Lumber Co.	2,867,366	"
Corn packing	Continental Can Co. Inc.	2,867,367	"
Cigarette carton	Mitzi Kaplan	2,867,368	"
Container for cigarettes	Charles C. Cernera	2,867,369	"
Multi-cellular carton	Joseph A. O'Reilly	2,867,370	"
Boxes having flexibly-hinged covers	Robert Nyden	2,867,371	"
Bag structure with pocket	O. M. Scott & Sons Co.	2,867,372	"
Double-letter envelope	Milton M. Kaufmann	2,867,373	"
Chilling roll for paper-coating machines	Mead Corp.	2,867,414	"
Cigarette package	Louis F. Lignaioli	2,868,363	1/13/59
Display device	Florez Inc.	2,868,364	"
Convertible receptacle for shipping and display	Richard E. Paige	2,868,365	"
Display containers	Jerome Shiffman	2,868,366-7	"
Fourdrinier-wire package	Eastwood-Neally Corp.	2,868,369	"
Display package	Lawrence R. Thorpe	2,868,371	"
Folding Box	Alan P. Mattes	2,868,404	"
Tote box	White Industries Inc.	2,868,405	"
Collapsible packing case	Frederic G. Kookogey	2,868,406	"
Packing containers	T. I. (Group Services) Ltd.	2,868,407	"
Holder for milk cartons	Jacob Kesselman	2,868,411	"
Paperboard tray	Container Corp. of America	2,868,429	"
Stacking paperboard tray	Container Corp. of America	2,868,430	"
Boxes	Crown Zellerback Corp.	2,868,431	"
Cartons with tear openers	Waldorf Paper Products Co.	2,868,432	"
Handle receptacle	American Box Board Co.	2,868,433	"
Paper-cup handle	Forest E. Jones	2,868,434	"
Container and closure	Getreideflocken A. G.	2,868,435	"
Paper bag with locking element having concealed ends	Equitable Paper Bag Co. Inc.	2,868,436	"
Packing tube	North American Philips Co. Inc.	2,868,437	"
Beater-saturated sheets having increased strength	Armstrong Cork Co.	2,868,641	"
Stock cross-flow distribution	Dominion Engineering Works Ltd.	2,869,436	1/20/59
Apparatus for making polygonal containers of paper	Jager-Werke A.G.	2,869,440	"
Paperboard container for tacky materials	Fibreboard Paper Products Corp.	2,869,722	"
Combined box and stand	Alice G. Robinson	2,869,769	"
Lunch-box contruction	Amalgamated Bass Prince Inventions Inc.	2,868,770	"
Multi-ply paper bag	Bemis Bro. Bag Co.	2,868,772	"
Synthetic paper sheet of chemically-bonded plymer fibers	E. I. du Pont de Nemours & Co.	2,869,973	"
Separation of liquids from pulp	Aktiebolaget Kamyr	2,870,009	"
Production of phenols by catalytic hydrogenation of lignin	Inventa A.-G. fur Forschung und Patentverwertung Luzern	2,870,133	"

Index to Advertisers

Acme Steel Company 240
Adell Chemical Company .....
Albany Felt Company 241
Allied Chemical Corp., General Chemical Division .....
American Cast Iron Pipe Co. .....
American Cyanamid Co. .....
American Paper & Pulp Co., Inc. .....
American SF Products, Inc. .....
Anheuser-Busch, Inc. .....
Antara Chemicals .....
Appleton Wire Works, Inc. 242
Appleton Wood Products Co. 282
Arnold, Hoffman & Co., Inc. .....
Asten-Hill Mfg. Co. .....
Atkins Saw Division .....

Barco Manufacturing Co. .....
Beloit Iron Works .....
Bird Machine Company 256
Black-Clawson Company, The .....
Buell Engineering Company .....
Burgess-Manning Company .....

Cameron Machine Co. .....
Carthage Machine Co. .....
CIBA Company Inc. .....
Classified Advertising 287
Clinton Corn Processing Co. .....
Corn Products Sales Co. .....
Curtiss-Wright Corporation ..... 4th Cover

Darling & Company 280
Dempster Brothers 258
De Zurik Corporation 272
Diamond Power Specialty Corp. 239
Dow Chemical Co. 243, 269
Draper Brothers Company 268

Egan & Co., Frank W. .....
English China Clays Sales Corp. 268
Evans & Son Ltd., E. P. 234

Fisher Governor Company 282
Fitchburg Screen Plate Co., Inc. .....
Foote Bros. Gear & Machine Corp. .....
Fritz Publications, Inc. .....

General Dyestuff Company .....

Hanchett Manufacturing Co. 282
Heil Company, The .....
Horton Manufacturing Co., Inc. 277
Hubinger Company, The .....
Humphrey Elevator Company 284
Huyck Felt Co. 238

Illinois Gear & Machine Co. .....
Improved Machinery, Inc. ..... 2nd Cover
Ingersoll-Rand .....

James Gear Mfg. Co., D. O. .....
Jenkins Sons, Inc., M. W. 280
Johnson Corporation, The 291
Jones Corporation, E. D. ..... 3rd Cover

Kalamazoo Tank & Silo Co. 267
Kerrigan Iron Works, Inc. 281

Ladish Co. .....
Lake Engineering Co. 281
Lawson Company, The .....
Layne & Bowler, Inc. 236
Lestoil, Inc. .....
Link-Belt Company .....
Lodding Engineering Corp. ..... 1st Cover

Marathon Southern Corporation .....
Moisture Register Co. 285
Murray Mfg. Co., D. J. 279

Nash Engineering Co., The 265
National Safety Council 286
Naylor Pipe Company 275
Neff & Fry Company .....
Northwest Engineering Company .....
Norton Company .....

Oilgear Company, The 260
Orr Felt & Blanket Co. .....

Paper Industry, The .....
Patton Manufacturing Co., Inc., The .....
Penick & Ford, Ltd., Inc. .....
Perkins & Son, Inc., B. F. .....
Photovolt Corporation 274
Planet Corporation 271
Poirier Control Company .....
Pusey & Jones Corp., The 259

Charles P. Raymond Service, Inc. 287
Rogers & Co., Samuel C. .....
Ross Midwest Fulton Corp. 266

Sandy Hill Iron and Brass Works .....
Scapa Dryers, Inc. .....
Shuler & Benninghofen 263
Signode Steel Strapping Co. 233
Sinclair Company, The 287
Smidth & Co., F. L. 264
Spraying Systems Co. 282
Sprout, Waldron & Co., Inc. .....
Staley Mfg. Co., A. E. .....
Standard Oil Co. (Indiana) .....
Stebbins Engineering & Mfgr. Co. 278
Stickle Steam Specialties Co. 275
Sveen-Pederson Sales Corp. .....
Swenson Evaporator Company .....

Tennessee Corporation .....
Texas Gulf Sulphur Co. .....
Torrington Company, The 288

Union Asbestos & Rubber Co. .....

Valley Iron Works Company .....
Vanderbilt Co., R. T. .....

Waldorf Industrial Controls 274
Waterbury Felt Company 287
West Bend Equipment Corp. .....
Weyerhaeuser Timber Co. .....
Whiting Corporation .....
Williams-Gray Company 291
Wolferz Alloy Equipment, E. C. 283

Yarnall-Waring Company .....

Professional & Business Service Section

Sirrine Company, J. E. 286

WILLIAMS-GRAY COMPANY
221 North LaSalle Street
Chicago 1, Illinois

Serving the Paper Industry
1906

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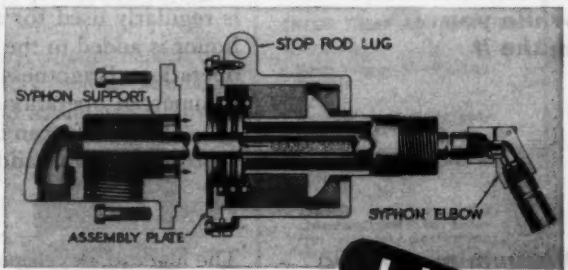
WES GALLUP
BILL FRENCH

Lindsay Wires
Knox Woolen Felts
Mount Vernon Dryer Felts

Carrier Rope, Splicing Tissues, Deckle Webbing, Apron Cloth, Wire Brushes

Rotary Joint Headquarters

★ Johnson started the whole idea. Today's *complete* line includes sizes from ¼" to 8" . . . self-supported, pipe-supported, or rod-supported . . . for stationary or rotating syphon pipe . . . all operating speeds and pressures . . . for paper machines, calenders, corrugators, waxers, embossers, roofing machines, printing presses.



Type SDP shown. Hinged syphon elbow replaces unwieldy curved syphon pipes with two straight pipes. Newest Johnson development is the Quick Release nipple. Write for Bulletin S-3001.

Johnson Rotary Pressure Joints

First in the Paper Industry

THE JOHNSON CORPORATION
845 Wood St., Three Rivers, Michigan

Detection of casein in paper

A method for the detection of casein in paper, even in the presence of gelatin and phosphates, consists of hydrolyzing the protein with trypsin in an ammonia solution. Tryptophan is one of the products of hydrolysis thus obtained when casein is present.

Tryptophan is identified, after chromatographic separation of the amino acids, with p-dimethylaminobenzaldehyde in hydrochloric acid resulting in the appearance of a blue spot.

U. S. production of paper and paperboard in 1959 to reach 32-32.5 million tons

U. S. production of paper and paperboard in 1959, according to A. B. Layton, former president of Crown-Zellerbach Corp., should rise to 32 million and possibly 32.5 million tons as against 30.8 million tons in 1958.

There is also a strong possibility that the industry will operate at 90 per cent of capacity in 1959 as compared with 85 per cent capacity in 1958.

Business activity strong in second quarter

Chemical business in the second quarter expanded to an estimated $6 billion. The movement of heavy tonnage chemicals, including acids, alkalis, chlorine, ammonia and phosphates, improved considerably over the first quarter.

A strong upturn in business activity is shaping up generally. Auto sales this year are expected to total more than the original forecast of 5.5 million cars. Steel operations in the final week in May reached 93.6 per cent of capacity, which is the second highest on record. Primary aluminum production in 1959 may come close to 1.9 million tons, a 20 per cent improvement over 1958.

Bleach it while you make it

In the new Becco process, bleaching takes place in the same equipment that is regularly used for the manufacture of cold caustic pulp. Peroxide bleach liquor is added to the Bauer refiner, and bleaching occurs during the refining operation. Brightness increases of up to 20 points have been obtained in commercial operations.

The process can be applied to all typical cold caustic pulps, no additional steam costs nor additional bleaching equipment costs being involved.

Vacuum metalizing process

The method, developed by F. J. Stokes Corp., consists of evaporating metallic aluminum and depositing the vapor on a moving web of paper in a chamber under high vacuum.

The thickness of the film is of the order of a few millionths of an inch. The film is discontinuous and the high degree of gloss obtained is commensurate with the gloss of the surface on which the film is deposited.

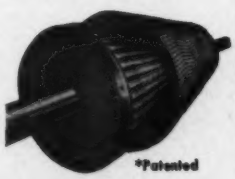
TOUGH

Jones® SUPER STAINLESS

...custom heat-treated to meet the toughest Jordan applications

Now in one Jordan bar steel — Jones Super Stainless — you can get the exact combination of physical properties you need for your particular refining operations. Inherently corrosion resistant, this tough chrome-nickel alloy is *precipitation* hardened by Jones' expertly controlled heat treating. This custom process relieves stresses within the metal and brings it to the ideal degree of hardness and tensile strength for your requirements.

Combine this superior metal with Jones' recognized leadership in the field of Jordan fillings and you have the best answer to your refining problems. On his next visit ask your Jones' representative for full details on Adapta-Plug* and Fulbar Shell Fillings with Super Stainless bars.



*Patented

CHECK THESE ADVANTAGES:

- Lasts longer than other metals
- Maintains sharper cutting edges.
- Cuts costs, improves refining
- Prompt service from standardized inventories — in any design for any Jordan

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Pittsfield, Massachusetts

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Curtiss-Wright PERMAWEB* –the automatic Fourdrinier system that detects and halts wet-end breaks... then restores the paper web to its full width... all within 8 to 15 seconds

The paper industry's leader in basis weight and moisture control systems

ELECTRONICS DIVISION

CURTISS-WRIGHT

CORPORATION • CARLSTADT, N. J.

Downtime costs on Fourdriniers can range from $600.00 to $1200.00 per hour, industry figures show. PermaWeb eliminates downtime due to wet-end breaks—can pay for itself many times over during the first year of installation.

Have you seen PermaWeb in action? A special film, made at the first PermaWeb installation, is now ready for viewing.

Call, wire or write George Butler, Manager, Industrial Control Department, Electronics Division, Curtiss-Wright Corporation, 635 Central Avenue, Carlstadt, New Jersey and he will arrange a private showing at your mill.

*Patent applied